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APPENDIX No. IX.

TABLE, exhibiting the circumstances which appear to have affected the Health of the Lascars, on board of the Ships mentioned in the foregoing Reports.

Ship's Name.	Sailed from	Arrived at	Sailed from	Arrived at	Original Number of Crew.	Shipped in England.	Died of Disease.		Prevailing Disease.	Food.	Clothing.	State of the Ship and Lascar's Berths.	Weather.
							Homeward.	Outward.					
Mornington, Appendix No. I.	Bengal, February 23, 1800.	Gravefend, September 12, 1800.	England, December 15, 1800.	Bengal, May 2, 1801.	8 Europeans, 82 Natives.	20 Europeans, 26 Natives.	3 Natives.	55 Natives.	Dropsical Swellings.	Rice, dāl, salted butter, herrings, full allowance of water.	Warm and comfortable; but the lascars very dirty in their persons.	Berth rather confined for air: often washed, and sprinkled with vinegar.	Homeward bound, stormy off the Cape: outward, hazy and moist, but moderate.
Arran, Appendix No. I.	Bengal, March 15, 1800.	Falmouth, September 1, 1800.	Portsmouth, December 7, 1800.	Cape, March 1, 1801. Bengal, May 25, 1801.	12 Europeans, 40 Natives.	49 Natives.	3 Natives.	41 Natives.	Ditto.	In England, fresh mutton, greens, and beer; outward, rice, herrings, onions, garlic, capicum.	Cloth jackets and trowsers; obliged to change them when wet. But dirty in cold weather.	Berth without ports or scuttles.	The greatest mortality in calm, clear weather, in Lat. 40 South.
Exeter, Appendix No. I.	Bengal, March 16, 1800.	Thames, September 6, 1800.	Gravefend, December 7, 1800.	Madras, May 15, 1801.	53 Natives.		8 Natives.	24 Natives.	Ditto.	In England, beef and beer: came on board sickly: outward, diet as in the other two ships.	Very indolent. Warm clothing furnished before leaving England.	Berth, with a port and scuttle on each side, deck often fumigated, and sprinkled with vinegar.	Disease most severe in cold weather.
Aurora, Appendix No. II.	Bengal, April 9, 1801.			Madras, July 18, 1802.	68 Men.	45 Natives.	1 Native, 4 In England.	15 Natives.	Fever. Scurvy.	Rice, dāl, butter, salt-herrings, potatoes, tamarinds, curry stuff.	Dress scanty, and very dirty.	Berth ventilated by a wind fall. Not washed, but often swabbed. Confined air.	Variable; seems not much to have affected the state of disease.
Lucy Maria, Appendix No. III.	Bengal, March 21, 1801.				86 Natives. (Af. Annual Register 1802, State Papers pag. 82)		22 Natives. (Af. Annual Register 1802, State Papers pag. 82)		Fever.	Rice, dāl, ghee, tamarinds, chillies; in harbour, fresh meat and vegetables; off the Cape, conjee, with rum and melasse, salted fish.		Well ventilated and roomy. Often fumigated and scraped.	Homeward, bad weather on the Cape.
Marian, Appendix No. IV.									Fever.	Rice, dāl, ghee, cod and herrings, potatoes, small beer, spruce beer.	Warm clothing in cold weather.	Rather confined, and imperfectly ventilated. White-washed often, and fumigated.	
Countess of Sutherland, Appendix No. V.	Bengal, April 1801.	England, February 1801.	Downs, August 7, 1802.	Sagur, January 29, 1803.	105 Men.			42 Natives.	In England, pleurisy and fever. Outward, fever and scurvy.	Homeward, rice, dāl, ghee, now and then a sheep, drams in bad weather. In England, mutton or beef, with vegetables. Outward, rice, butter and fish.	Well clothed, but the men dirty and indolent.	Roomy, well ventilated and clean.	Homeward, very stormy.
Porcher, Appendix No. VI.			England, April 1, 1801.	Falfe Bay, August 1, 1801.	120 Natives.		Died in England, 7 Natives.	5 Natives.	In England, fever and pneumonia. Off the Cape, scurvy, with dropsical swellings.	Rice, dāl, ghee, a few salt herrings.	Proper clothing wanting: men dirty and indolent.	Decks often wet.	Off the Cape, cold, with rain at times.
Scaleby Castle, Appendix No. VII.			England, April 6, 1803.	Bombay, August 9, 1803.	25 to 30 Europeans. 120 to 130 Natives.			27 Natives.	Scurvy.	Rice and ghee, with two drams daily, some salt-fish, rather old.	Warm plaiding and stout shoes. Dirty and never changed their clothes.	Clean, dry, and well ventilated.	Pleasant and dry, except in the Bay of Biscay, near the line, and off the Cape.
Superb, Appendix No. VIII.	Bengal, March 18, 1801.	Mocha, May 28, 1801.	Mocha, May 30, 1803.	Coffier, July 11, 1803.	68 Natives.		From Mocha to Coffier and at Coffier 13 Natives.	After leaving Coffier, 11 Natives.	Scurvy and fever.	Before arriving at Mocha, rice, dāl, ghee, salt-fish. From Mocha to Coffier the same provisions, with salted limes.	Badly clothed.	Berth very confined, and badly ventilated.	Bad weather.
Althea, Appendix No. XVI.	Bengal, April 17, 1802.	St. Helena, July 24. Deptford, October 16, 1802.	England, January 2, 1803.	Calcutta, May 8, 1803.	14 Europeans, 85 Natives.	12 Europeans, 7 Natives.	2 Natives, 4 Do. in England.	7 Natives.	Homeward, catarrh; after rounding the Cape, scurvy. In England, catarrh, dysentery, rheumatism. Outward, bilious fever.	Homeward, rice, dāl, ghee, wheat, melasses, salt-fish, preserved tamarinds, capicum, onions, garlic. In England, fresh mutton, with vegetables and small beer. Outward, the same as homeward, with potatoes.	In cold weather banyan, drawers and socks of Patna blanketing, cloth trowsers and cloth jackets lined with blanketing; cap and shoes. In warm weather their own common dress. Lascars kept clean and anointed with oil, to which rum was sometimes added.	Ship well ventilated.	Homeward; at first gloomy, squally with rain: through the trades fine: in June a gale of wind for 48 hours. Till 9th July almost constant gale and cold: after rounding the Cape, fine. Outward, clear and moderate.

AN ESSAY

ON THE

DISEASES

INCIDENT TO

INDIAN SEAMEN, OR LASCARS,
ON LONG VOYAGES.

BY WILLIAM HUNTER, A. M.

MEMBER OF THE ASIATICK SOCIETY OF CALCUTTA, FOREIGN
MEMBER OF THE MEDICAL SOCIETY OF LONDON, HONORARY
MEMBER OF THE ACADEMICAL SOCIETY OF SCIENCES
OF PARIS, AND SURGEON TO THE HONORABLE
COMPANY'S MARINE ESTABLISHMENT IN
BENGAL.

" ————— You gallant Vernon! saw
" The miserable scene; you pitying saw
" To infant weakness sunk the warrior's arm,
" Saw the deep-racking pang, the ghastly form,
" The lip pale-quivering, and the beamless eye,
" No more with ardour bright: you heard the groans
" Of agonizing ships from shore to shore:
" Heard nightly plung'd amid the fullen waves,
" The frequent corse, while on each other fix'd,
" In sad presage, the blank assistants seem'd
" Silent, to ask whom Fate would next demand."

THOMPSON.

With you, empassioned bard, Britannia wails
Her dauntless sons, a prey to fell disease,
The scorn of foes their valour had subdu'd:
Nor yet with-holds from those the pitying tear,
Who, from the torrid regions, where the sun
High o'er the flaming zenith rolls his car,
Bear to her ports the wealth of orient worlds.

CALCUTTA:

PRINTED AT THE HONORABLE COMPANY'S PRESS.

1804.

TO

HIS EXCELLENCY, THE MOST NOBLE

RICHARD MARQUIS WELLESLEY, K. P.

GOVERNOR GENERAL AND CAPTAIN GENERAL,

Ec. Ec. Ec.

MAY IT PLEASE YOUR EXCELLENCY;

AT a time when even the destructive operations of war have, under the auspices of your Excellency's counsels, been so happily and gloriously directed, not only to the vindication of your Country's rights and honor, but also to the relief of suffering humanity, by the emancipation of provinces groaning under an oppressive yoke, and the deliverance of the unfortunate, but venerable representative of the illustrious house of TIMOOR, from complicated distress; to whom can the humbler art, whose object is to preserve health, or restore it when lost, look for a patron, with such propriety as to your Excellency?

PERMIT me then to place under your Excellency's protection, the following attempt to rescue from the ravages of disease, a class of men, whose labours have, under your Excellency's Government, been employed, to a greater extent than before, for the advantage of the British Nation, and of the Honorable East India Company.

THAT your Excellency may long behold the flourishing state of that Empire, whose extension and stability have resulted from the wisdom

wisdom and vigour of your measures; and see, laden with precious fruit, that tree of science, which, under your fostering hand, has already put forth the most promising blossom, is the earnest prayer of,

MAY IT PLEASE YOUR EXCELLENCY, .

Your Excellency's

Most obedient and humble Servant,

THE AUTHOR

TO

WILLIAM HUNTER, Esq.

MARINE SURGEON.

SIR,

I HAVE the pleasure to forward Copy of a Letter from the Chief Secretary to the Government, respecting the Publication of your Essay on the Diseases of Indian Seamen or Lascars; and, agreeably to the Instructions therein contained, the Board desire that you will be pleased to superintend the Work during its progress through the Press.

I have the honor to be,

SIR,

Your obedient Servant,

FORT WILLIAM,
MEDICAL BOARD OFFICE,
March 5, 1804.

FRAN. BALFOUR,
*1st Member of the
Medical Board.*

TO

F. BALFOUR, Esq.

PRESIDENT, AND MEMBERS OF THE
MEDICAL BOARD.

GENTLEMEN,

I AM directed by HIS EXCELLENCY THE MOST NOBLE THE GOVERNOR GENERAL IN COUNCIL, to acknowledge the receipt of your Letter dated the 13th ultimo, communicating your opinion with respect to the merits of a Work, submitted to Government by Mr. WILLIAM HUNTER, entitled "An Essay on the Diseases of Indian Seamen or Lascars."

2. In consideration of the sentiments you have expressed of the value, and probable practical utility of Mr. HUNTER's labours, HIS EXCELLENCY IN COUNCIL has been pleased to direct; that an Edition of Five Hundred Copies of the Work shall be printed at the Expence of Government:

3. You are accordingly desired to request Mr. HUNTER to Superintend the Work during its progress through the Press.

I have, &c.

(Signed) J. LUMSDEN,

Chief Sec. to the Govt.

PUBLIC DEPARTMENT,
COUNCIL CHAMBER, March 1, 1804.

MEDICAL BOARD OFFICE;
March 5, 1804.

A TRUE COPY,
FRAN. BALFOUR.

AN ESSAY ON THE DISEASES INCIDENT TO INDIAN SEAMEN, OR LASCARS, ON LONG VOYAGES.

WHEN the spirit of commerce, and the lust of dominion, aided by the invention of the compass, the genius of COLUMBUS, and the enterprise of the Princes of *Portugal*, stimulated navigators to abandon the narrow tract of their predecessors, and boldly launch into the midst of the Ocean; the contention of the elements, and the danger of unknown rocks and shoals, were not the only difficulties they had to encounter. Disease broke out, in new and hideous forms, whereof the first, and for a long time, the best descriptions, were to be found in the relations of voyages (1). Nearly three centuries had elapsed, before means were discovered, or partly to check its progress, and it was reserved for COOK to demonstrate, that a numerous crew, performing a long voyage, in all climates, and exposed to every vicissitude of season, may enjoy as perfect health, as an equal number of individuals, in the most favorable situation on shore.

The farther extension of the same commercial enterprise has lately produced a phenomenon, which may be justly esteemed a new æra in the history of Navigation; the natives of *India*, retracing the route of the adventurous GAMA, and conducting ships into the *Tagus*, the *Thames*, and the *Baltic*. The great change of climate, and manner of life, to which they are exposed, on such a voyage, might naturally be expected to produce distemper: and accordingly, experience has shewn, that it sometimes prevails with fatal violence. The cause of humanity, therefore, and the interest of a great commercial nation, which derives advantage from the labours of this class of men, demand every exertion to trace the malady to its source, restrain its progress, and prevent its ravages.

(1) LIND on Scurvy.—Preface, and Part III; Chap. I.

THE writer of these pages, being called upon, in the execution of his duty, as Marine Surgeon, to examine into the cause of an unusual mortality among the native crews of some of the country ships, which returned from *England*, in the year 1801; the singularity of the disease, together with its rapid and fatal progress (2), arrested his attention; and he resolved to lose no opportunity of collecting farther information on the subject. In the course of this inquiry, he met with other varieties of disease, which he will now proceed to enumerate, with such remarks as the materials in his possession enable him to offer. These materials principally consist of reports made to the Board of Trade, by the Master Attendant, and Marine Surgeon, or Assistant-Surgeon in charge of the Marine, contained in Appendix Nos. 1, 2, 3, 4, and 5. An abstract of them, and of some other similar statements, is exhibited in the Table No. 9.

1. F E V E R.

A FEW sporadic cases occurred on board the *Mornington*, the *Arron* (3) and the *Countess of Southerland* (4); but it prevailed, to an alarming and fatal degree, on board the *Aurora* (5), the *Lucy Maria* (6), and the *Marina* (7). As far as any conclusion could be drawn from the imperfect account, received of the symptoms, these fevers appear to have been of the description usually termed bilious, which chiefly prevail in hot climates.

THE predisposition to disease appears to have been contracted in *England*, by the inclemency of the weather, and irregularities in living (8); and the principal exciting causes were, neglect of cleanliness in the persons of the lascars, keeping on their wet clothes after going below, indolence and want of sufficient ventilation in their berths (9). In two instances (9) the disease was ascribed to contagion; but the evidence in proof of this is very defective; and some circumstances are adverse to that supposition. How far their diet might have contributed to aid the other causes of disease, appears uncertain; and, as an occasion will offer, of treating this subject more at large, it would be superfluous to enter on it, in this place.

(2) See Appendix No. 1.

(6) No. 3.

(3) No. 1.

(7) No. 4.

(4) No. 5.

(8) No. 3. and 4.

(5) No. 2.

(9) Nos. 2 and 4.

ON the method of treatment, our information is but scanty. It appears, however, that free evacuations in the beginning, followed by the use of tonics, was the plan generally pursued (10); and, in several instances, with the same good effects that result from it, in the bilious fever of hot climates. But the stock of medicines was often insufficient, and soon exhausted (11); and the want of sufficient attention to convey nourishment to the sick, seems to have been fatal to many (11).

2. PNEUMONIA.

THIS disease prevailed on board the *Aurora* (12), soon after she failed from *England*; and in the *Countess of Sutherland*, about the time of her arrival there (13). In both cases, it was evidently caused by the inclemency of the weather; from which the feeble natives of a warmer climate were not sufficiently protected. And it yielded to the usual antiphlogistic plan of cure.

3. PHTHISIS.

THIS proved fatal, on board the *Aurora* (14) to one man, in whom it seems to have been a sequela of the former disease.

4. HEPATITIS.

OF this, two men died on board the *Lucy Maria*, soon after she failed from *England* (15). Not being informed of the season of the year, or state of the weather, at that time, we cannot judge how far these contributed to its production, but the subjects of it had suffered much from preceding disease.

5. SCURVY.

THIS disease prevailed on board the *Aurora*, towards the close of her voyage outward (16); and on board the *Countess of Sutherland*, about the same period (17); in the first of these ships, it was preceded by a long continuance of damp and rainy weather; but, in both, the principal causes seem to have been a diet defective in nutritious qualities, inattention to

(10) No. 1, Mornington; No. 3, Lucy Maria.

(11) No. 4.

(12) No. 1.

(13) No. 5.

(14) No. 1.

(15) No. 3.

(16) No. 2.

(17) No. 5.

cleanliness, indolence, and the debility induced by excessive fatigue and preceding disease. Of its symptoms, or the means adopted to arrest its progress, we have no detail. This defect is in some measure supplied by the statements, Nos. 6 and 7, of this disease, as it occurred on board of the *Porcher* and the *Scaleby Castle*, which have been obligingly communicated to me by Mr. Ross and Mr. McWhorter, who had charge of the sick on board of those ships, on the voyage from *England* to *India*. The cause of disease were the same as have been already assigned; to which, on board the *Porcher*, was added a want of proper clothing. The symptoms were lassitude, and aversion from motion; the gums, from the beginning, livid and tender, afterwards spongy and foul. In the *Porcher*, cedematous swellings of the feet, with puerile, were general, and occurred early; in the *Scaleby Castle*, they were confined to a few cases, and appeared later in the disease. This was followed by swelling of the abdomen, affection of the chest, dyspnoea, oedema of the face, arms and hands, soon after which death closed the scene. In some cases hæmorrhage occurred. The urine, in the advanced stages, was scanty, and high coloured. One body was examined on board the *Porcher*, and water found collected in the cellular membrane. The duration of the disease, from one to six weeks.

On board of both ships, the appropriate remedy of lemon juice, was wanting. Mr. Ross gave first a purgative medicine, followed by an opiate; a practice suggested by the oedema, which was here the first symptom of disease. He afterwards allowed the patient beer, with some plums, sugar and tea. This practice, in many instances, prolonged life, till vegetables could be procured. Mr. McWhorter gave his patients wine dissolved in vinegar, after the manner recommended by Mr. PATERSON (18), and also the mineral acids; both without success. Camphor for a time relieved the oppression of the chest.

6. DROPSICAL SWELLINGS.

Of this disease, which occasioned the most alarming devastation, on board the *Mornington*, the *Arran* and the *Exeter*, as full an account as could be collected from the officers of those ships, will be found in

(18) See *Annals of Medicine*, Vol. I.

Appendix No. 1, and the following is a short description of the symptoms, collected from the histories of those three voyages.

THE disease commenced with œdematous swelling of the feet, accompanied with stiffness and numbness of the joints. These two symptoms appear to have been so nearly simultaneous, that it is difficult to say which of them preceded the other. In some instances, an aversion from motion was observable for a day or two, before the appearance of those complaints; in others the men continued their usual exercise and duty, while the swelling was confined to the feet. But it rapidly extended upwards, occupying the legs and thighs. When it reached the abdomen, it caused severe tension, which increased to such a degree, that the patient seldom survived one day, after the distention had extended as high as the stomach.

In one instance, the fatal dyspœnea was not attended with any perceptible swelling.

DEATH was preceded by pain at the *strobiculus cordis*, increased by pressure; and about this time, many had bilious vomitings.

THE face was swelled and bloated. Thirst, great during the whole disease, but much increased, a little before death. Urine scanty, and voided with difficulty. They were in general costive. No account is given of the state of the appetite, nor of the pulse.

NONE of the cases exhibited any swelling, sponginess or bleeding of the gums; or any spots, or sores, that could be deemed scorbutic, on the limbs, or any part of the body. Some indeed, of the crew of the *Arram*, had sores, proceeding from an itchy, or herpetic affection; but those appear to have rather served as a salutary drain, than to have formed a part of the disease.

THE whole duration of the complaint, from the first seizure, to its fatal termination, was often comprised within the space of two days; and it appears to have seldom exceeded twenty.

IN the only dissection which was made of the dead, a small quantity of water was found, in the cavity of the Abdomen; and the cellular substance, all over the body, was greatly distended with the same fluid. The cavities of the chest, and of the pericardium, did not contain more than the usual quantity. The viscera of the thorax and abdomen were perfectly sound.

FROM the above history of the symptoms and of the appearances on dissection, there can be no doubt that a principal feature of the disease was *Anasarca*. But there is reason to believe, that, in some instances, it may have been complicated with dropfy of the chest, pericardium, or cellular substance of the lungs. In addition to the reasons for this opinion, assigned in the *Marine-Burgeon's* report (see Appendix No. 1.) we may quote the authority of ALBERTINI (19) and of SIMSON (20) who always suspected a dropfy of the lungs, when dyspnoea quickly followed an œdema of the feet and a puffy swelling of the face. Two instances are adduced, in that report, of epidemical dropfy, which in its symptoms and rapid progress, resembled this disease of the lascars. To those we may add a distemper, incident to the negro slaves, in the *West Indies*, described by SAUVAGES, under the name of *Anasarca Americana*; and by Dr. DAVIDSON, under that of *Cachexia Africana*, (See Appendix No. 10.) The causes, assigned by Dr. DAVIDSON, are, in many respects, the same with those to which the lascars were exposed; in the symptoms there is a remarkable coincidence; and he states, that after the anasarcaous swellings have existed some time, water is collected in the belly and chest. But, the immediate cause of death he considers to be a want of irritability, or stimulating power, in the blood; and, whatever weight we allow to the arguments, by which he supports this opinion, they are equally applicable to the disease of the lascars. Now, one of the circumstances, on which the power of the blood, to stimulate the heart, depends, is the quantity of oxygen which it contains (21): and, if that is here deficient, the nature of the disease in question so far agrees with that of scurvy. The same causes, which, on board of those three ships, produced dropfical swellings; brought on scurvy among the crews of the *Aurora* and *Countess of Sutherland*. Dr. DAVIDSON, indeed, attempts to account for the different symptoms of the two diseases, by saying, that putrid animal food has not in this case, as in scurvy, been employed, as an article of diet. But no sensible difference can be traced between the diet of those lascars, who were subjected to one or other of these diseases. And we have sufficient evidence, that scurvy may be produced without the use of salted, or indeed, of any, animal food (22).

(19) Van Swiet, Com. § 1220.

(20) Med. Essays VI. 125.

(21) See Dr. GOODWIN'S

Experiments.

(22) See Appendix No. 11.

FROM all these circumstances, I am disposed to think, that although the pathognomonic marks of scurvy, diseased gums, spots on the skin, and ulcers, were wanting; yet, in its essence, the malady on board of the *Mornington*, the *Arran*, and the *Exeter*, was nearly allied to that disease; a consideration which may have some influence on the method of cure.

AND this opinion is still more strongly confirmed by the narrative which Mr. Ross gives of the disease, which prevailed on board the *Porcher* (23). The manner of attack resembled that on board the *Mornington*, &c. but the genuine symptoms of scurvy quickly supervened, and the two diseases rapidly advanced, hand in hand, to their fatal termination. The idea that scurvy and dropsy are fundamentally connected, is mentioned by SYDENHAM, as prevalent in his day, "*ubi desinit Scorbutus, ibi incipit Hydrops;*" (Sect. VI, ch. 5.) and although he seems disposed to put a different interpretation on the words; yet the foregoing facts and reasonings may tend to prove, that, taken literally, they have a better foundation than that illustrious physician is willing to allow.

ANOTHER instance of similar disease occurred among some Poligars, who were transported, as prisoners, from the coast of *Coromandel*, to *Prince of Wales's Island*, in 1802. They encountered a very tedious passage, during which, several of them died. On their arrival, they were confined, in a house, the floor of which, not being raised, was damp. Being still in irons, they were unable to take exercise. These circumstances, joined to the depression of spirits natural to their situation, soon induced disease. The symptoms were, aversion from motion, œdematous swelling of the feet, gradually extending upwards, and dyspnoea, which soon proved fatal. Evacuations, followed up by stimulating and tonic medicines, were used with some success. Among the stimulants, an article which, both as medicine and seasoning to their food, proved very grateful to the stomachs of the sick, was a plant, called, by the *English* on the Island, *wild sage*. (*Conyza Balsamifera* Lin. *Boonga Chappa* of the *Malays*.) But the disease could not be eradicated, till the people were removed to a dry situation, in the country, and indulged with the liberty of exercise, within the area of the building.

THE diseases, which occurred to Mr. DICK and Mr. CHRISTIE (24), as well as those described in the Marine Surgeon's report (24), and those which attacked the prisoners at *Prince of Wales's Island*, are essentially the same with that of the negroes, described by SAUVAGES and Dr. DAVIDSON (25). But the names, given by those authors, appear exceptionable. From what has gone before, it is evident that the disease is neither peculiar to the climate of the *West Indies*, nor to the natives of *Africa*. And the term *Cachexia*, which, as a generic name, has obtained admission into only two nosological systems (26) conveys a vague idea. From the affinity it has to scurvy, it might perhaps have been called *Anasarca Scorbatica*; but that has been appropriated, by SAUVAGES, to the dropsy which supervenes under actual scurvy in its last stage, a little before its final termination (27). As it appears to originate from food, either deficient in quantity or quality, or somehow prevented from being converted into proper nourishment, I would propose the specific name *Cachexia*, as expressive of its causes; whereof we now proceed to treat more particularly.

I. THE first, and principal cause, is *general debility*, proceeding from the following sources;

1. *Food, deficient in nourishment, or in stimulating power.*

In order to estimate the effect of this, it is necessary to premise a knowledge of the food to which those people are accustomed on shore. This chiefly consists of *rice*, and *dāl*, (the split seeds of several leguminous plants, but chiefly of the *Cytisus Cajan*) to which is added a considerable quantity of *ghee*, (or *butter*, clarified by melting, without salt) and the whole is seasoned with *onions*, *garlic*, *capsicum*, *ginger* and *asafoetida*.

(24) App. No. 1.

(25) The following differences may be remarked: Numbness of the Limbs is not mentioned by SAUVAGES and Dr. DAVIDSON. In *Beriberi*, it forms a leading symptom, and often goes on to complete paralysis. Vomiting greatly increased before death, not mentioned in *Cachexia Africana*. Acidity and eating of chalk or dirt, are peculiar to *Cachexia Africana*. This is probably the consequence of a habit contracted by the Negroes in their native country. The obstructions of the mesenteric glands, observed in *Cachexia Africana*, may be caused by this practice.

(26) Those of LINNÆUS and VOGEL, chap. 2, page 113, edit. 1772.

(27) Nosol. Vol. V, p. 66, LIND on scurvy P. II.

work. They eat very little animal food, not from prejudice, or religious obligation, but because they cannot afford it.

On board of these ships, the provision of the lascars consisted of *rice*, as much as they could eat. In some of the ships, they had split pease to mix with it, and salted herrings; but the first of these articles was expended long before the end of the voyage, and the allowance of the second was stopped, after sickness began to appear. They had salt butter instead of ghee. On board of the *Arman*, they had *cassiam*; but, for the other articles of condiment, they were obliged to depend on their own pickles &c. They had plenty of water, and on board the *Arman* had small beer to drink, for a fortnight after leaving *Po ly mouth*. During their residence in *England*, the lascars had a pretty full diet of animal food; and beer for common drink.

Thus, their diet on board appears to differ from that which is usual to them on shore, in two respects; that salt butter could not be used in such quantity as to supply the place of ghee; and that the condiments to which they are accustomed were wanting, entirely, or in part. The last defect was probably the most powerful in causing disease; for greasy substances which have been found instrumental in producing scurvy (28), could hardly prevent a distemper which appears allied to it, in so many respects. And the effect, produced on the natives of *India*, by the want of condiment, is strongly exemplified in the case of the *Bengal Sepahees* related in Appendix No. 11.

BUT, on the passage out, when the disease chiefly prevailed, the operation of this cause was greatly promoted, by the crew having been accustomed, while in *England*, to a more nourishing, and stimulating diet, than in their own country; whereby debility produced by the abstraction of stimulus became proportionally greater (29).

THIS remarkable circumstance, that the lascars, on the voyage to

(28) TROTTER's observations on Scurvy. TOWNSEND's Guide, 3d Ed. p. 526.

(29) The general principle, that the operation of any cause is most powerful on systems unaccustomed to its action, is too well established to need any farther proof or illustration. Yet, it may not be impertinent to notice a remarkable fact, recorded by Dr. BLANE, (on Diseases of Seamen, P. 1. B. 2. Ch. 4. p. 90, 3d edit.) That a fever excited on board the *Ville de Paris* by foul air, affected the Officers in a greater proportion than the common men. The Officers, as that judicious physician observes, being accustomed to breathe a purer air, were more affected by an opposite state of the atmosphere. A similar instance is related, by the same author, as occurring on board one of our own ships of the line, (ibid. p. 109).

England, encountered, with impunity, all those causes of disease which depend on the elements, to a much higher degree than outward bound, when they became a prey to its ravages, was remarked on board of most of the ships (Appendix Nos. 1, 2, 3, 4, and 5.) And thence we must draw one of two conclusions: either that the fuller diet of animal food, which the lascars had in *England*, was not so well calculated to maintain them in health, as the slender fare, to which they are accustomed in their native country; or that the sudden withdrawing of a good nutritious diet, was more severely felt, than the want of it would have been, if it had never been enjoyed. Of these, I have no hesitation in adopting the last; in conformity to which, I would recommend, not abstinence from animal food in *England*; but the continuance of its use, for some time after going to sea; and the gradual reduction of it, as the ship approaches a warmer latitude. The opinion of Mr. McRAE, (Appendix No. 5,) is exactly that which I wish to inculcate, “ while in *England*, “ they were accustomed to the free use of butcher’s meat and vegetables, “ of which they were deprived at sea, and a far inferior diet substituted in “ its room: this I consider to have been the chief cause of scurvy.” A more stimulating diet, in a colder climate, I consider to be equally necessary for a lascar, as warmer clothing. And the converse of this proposition I also believe to be true; that, among *Europeans*, transported to a tropical climate, those are most likely to enjoy exemption from disease, and to bear, when necessary, exertion in the sun, who most nearly imitate the abstemious diet of the natives (30).

BUT the effect of a difference in diet, between people, whose situations, in other respects, were nearly similar, is most strongly exemplified in the case of the gun lascars, embarked on the *Superb* transport, and those belonging to the ship; related in the communication, Appendix No. 8, with which I was favoured by Mr. WAKE, who had the medical charge of the detachment on board. The gun lascars, besides other comforts of which the crew were deprived, had fresh *provisions* (that is, animal food) twice a week. And this, in the opinion, both of Mr. WAKE and Captain BROWN, contributed much to the preservation of their health.

(30) See McLEAN on the Diseases of St. Domingo, p. 197.

2. *The respiring of an atmosphere which was deficient in Oxygen.* To this cause, the crews of all the ships, except the *Lucy Maria* and *Countess of Sutherland*, were exposed; and it is one of the leading circumstances, (next to that of diet) in which Mr. WAKE states the situation of the gun lascars, on board the *Superb*, to have been better than that of the ship's company.

3. *Preceding disease.* The crew of the *Mornington* had fevers, and those of the *Arran* pulmonary complaints, at early periods of their voyages. Those of the *Exeter* were received on board in a sickly state. Acute diseases have, from the earliest times, been enumerated among the causes which predispose to dropsy. And it is worthy of remark, that the ancients esteemed those dropsies, which are ushered in, in this manner, to be the most rapid in their progress, and the most fatal, (see Appendix No. 12).

4. *Intemperance.* The sickly condition of the *Exeter's* crew, before leaving England, is ascribed to this cause (31); and it no doubt produced a morbid predisposition, in many, who had not then been seized with actual disease. Similar causes of predisposition are hinted at on board the *Aurora* (32), and the *Countess of Sutherland* (33).

5. *Indolence and want of exercise.* This cause appears to have especially prevailed on board the *Exeter* (34), and its operation was undoubtedly powerful.

6. *Excessive fatigue.* This cause, which is no less productive of debility than its opposite, did not occur in the ships where dropical swellings prevailed; but it had its share in the inducing of disease on board the *Aurora* and the *Countess of Sutherland*. It is also mentioned by Captain WRIGHT among the causes of the scurvy which afflicted the crew of the *Superb* (35):

(31) App. No. 1.

(32) App. No. 2. "Clothes were given to the crew of the *Aurora*, by Captain GILMORE, or at least to such as he could prevail upon to take them; but even the cold winters of *Europe* are not sufficient to make a lascar forego the pleasure he expects in port."

(33) App. No. 5. "Captain EGLESTON says, that more than half his ship's company deserted him, at times, upon those profitable excursions."

(34) App. No. 1.

(35) In a conversation which I had with that Gentleman: as my queries happened not to be directed to that point, it is not adverted to in the answers of Captain WRIGHT.

II. SUPPRESSED PERSPIRATION. Brought on by.

1. *Exposure to cold and moisture, after remaining sometime in a close and warm situation.* To this might also contribute,

2. *The impurity of the air in the berth assigned to the lascars; as such air being already impregnated with human effluvia, cannot be supposed to carry them freely off.*

3. *The dampness of the lascar's berth; which was increased by frequent washing, in circumstances where the deck could not be effectually dried.* This seems to have been particularly the case on board the *Montezuma*; and the same remark is made by Dr. HARE on the *Aurora* (Appendix No. 2.)

4. *Inattention to cleanliness in the dresses of the lascars.*

5. *Want of sufficient covering in cold and rainy weather.*

HAVING thus enumerated the diseases which attack the lascars on long voyages, and endeavoured to investigate their causes, I shall next proceed to detail the simplest and most effectual methods of prevention and cure. In doing this, as it is my intention to lay down a plan, whereof the execution may be within the reach of those who are not of the medical profession, I shall confine myself to those instructions for the commanders of ships sailing to *England* with lascars, which at the desire of the Board of Trade, I had the honor of presenting to them in 1801; and which were then adopted; only with such alterations and additions, as further inquiry and reflection have suggested.

D I E T.

Besides the allowance of *rice* and *dal*, the people must be furnished daily, with half a root of *garlick*, five or six *onions*, about a drachm weight of green *ginger*, ten or twelve pods of *capsicum* (usually called cayenne pepper, or chillies) a tea-spoonful of black *pepper*, and two or three drachms of *turmeric*.

N. B. The weight of a rupee is about three drachms.

Of the *capsicum*, black *pepper*, and *turmeric*, a sufficient quantity should be laid in, in *India*, to last during the voyage to *Europe*, and out again, and *ghee* ought also to be provided, in sufficient quantity for this purpose. It will keep for two years, when carefully stored, and is more grateful to the natives, than salted *butter*. A fresh stock of *onions* and *garlic* should be

laid

laid in before sailing from *England*. In order to preserve the onions, besides being frequently spread out and exposed to the air, the root should be cut off and the part seared with a hot iron: or, a red-hot wire may be passed through the heart of the onion, from the root to the point where the shoot would grow. Melasses, which have been found a valuable improvement in the victualling of the navy (36), and are procurable in Bengal at an easy rate, ought to be an article in the diet of the lascars.

A LARGE stock of preserved *tamarinds* ought to be carried from *Bengal*. The expense is trifling: they are a wholesome and agreeable acid, and may be applied to many useful purposes (37).

No country affords a greater variety than Bengal of fruits and vegetables, which will keep long at sea, and preserve the crew from disease, particularly scurvy. Among these we may enumerate the *pumpkin*, which, boiled, or stewed, will form an agreeable and salutary ingredient in the victuals of the crew. With the addition of *tamarinds*, they make an excellent tart.

The *yam* is a good substitute for *potatoes*. It has the advantage of greater compactness, it will keep longer, and at any rate, is preferable at those seasons when the potatoe is not to be obtained fresh.

The *jamun* abounds with the citric acid, which is the appropriate remedy of scurvy, and I believe will keep longer fresh than either the *lime* or the *orange*. As those fruits cannot be preserved for a long voyage, it becomes necessary to use their juice, which may be prepared in the following manner. Immediately after the lime-juice is expressed, it should be strained through flannel, and then exposed to the sun, in bottles slightly stoppered, till it deposits the remaining mucilage, and other extraneous matter, and becomes perfectly clear. It is then to be poured off from the

(36) BLANE on Seamen, p. 281, and 284.

(37) The preserved tamarind may be obtained ready made, in every bazar. Or the recent fruit may be prepared by either of the following methods:—

1. Put the fruit, deprived of its husk, into a kettle, with water sufficient to prevent burning. keep it over a gentle fire, till it is heated through, and the pulp softened. Then strain the pulp through a very coarse cloth, and expose it, in shallow dishes, to the sun, till it acquire a consistence fit to form into balls, about an inch in diameter. These must be exposed daily to the sun, till they become of a dark brown colour. They may then be kept in an earthen pot, and in moist weather sometimes exposed to the sun.

2. The recent fruit, stripped of the husk, may be stewed in a cask or jar, with alternate layers of sugar.

dregs, into clean bottles, a little fresh olive oil poured on the surface, the more perfectly to exclude the air, and closely corked up. Or a tenth part of proof spirit may be added, to prevent it from spoiling. Of this juice not less than twenty gallons should be laid in for a crew of one hundred men. The natives in general are fond of eating *sugar-cane*. Its juice is powerfully antiscorbutic; and as the negroes, in the *West-Indies*, are observed to get fat in the cane season, we may conclude that it is in no small degree nutritious.

Carrots, preserved by *sugar*, and *green vegetables* by *salt*, will make an agreeable variety in diet for some time after going to sea (38).

Rare potatoes, sliced, with *vinegar*, having been found useful in preserving from scurvy, may be given when danger is apprehended from that disease (39).

THE green *ginger* will not keep, and cannot be replaced in *England*; and the natives appear to have a prejudice against substituting the dried root in its place; yet this might be tried. The green root candied, with coarse *sugar*, might also prove an useful substitute, and would not be expensive: failing both, the proportion of the other spices may be somewhat increased.

Wheat (40), boiled up into a mess, with *sugar*, and a little wine, or spirits, may be occasionally given instead of rice; and will make an useful change in cold weather.

WITH the same view, an allowance of *tea* and *sugar* may be occasionally served to the people. *Coffee* would be grateful and salutary on such occasions; if that is wanting, wheat or pease toasted, and prepared in the same manner, make a good substitute.

ANOTHER useful and agreeable variety in diet, especially when there is reason to dread the approach of scurvy, may be found in *flummery*, which is made by mixing oatmeal with water, and allowing it to stand till it becomes slightly acid, then boiling it to the consistence of a jelly (41).

THE people, being accustomed, in *England*, to animal food, ought to

(38) BLANE on Seamen, p. 279.

(39) Ibid. page 39.

(40) Wheat or barley sweetened with melasses, is often used for breakfast, on board of *Whalers*, and other ships that frequent cold latitudes.

(41) BLANE on Seamen, p. 286.

have something of that kind, on the passage out. *Stock-fish*, eaten with *mustard* and *vinegar*, appears to be a better article than salted herring. Fish prepared with *tamarinds* would also be useful; and a sufficient stock should be made in *England*, for the voyage out. If a *sheep*, now and then, can be given to the crew, it will yield still better nourishment. But, as a sufficient supply of this can hardly be expected, a certain proportion of *salted beef* might be given them, twice a week (42). Their religious prejudices forbid that which is killed and prepared by *Europeans*. But this might be removed, if the task of killing and curing were committed to some of themselves, who might be instructed how to do it.

SOME cheap *pickles*, or *fermented*, would be an useful addition to the salt provisions. A cake of *portable soup* might be occasionally boiled up, with *yeast* or *vegetables*, and would thus make a comfortable and nourishing meal.

On the passage out, a pint of *beer* daily, should be served to each man, of a strength sufficient to keep at sea.

A FULL allowance of water is of the greatest importance (43); and when there is reason to suspect the approach of scurvy, it should be mixed with lime-juice, in the proportion of an ounce daily to each man. But there is reason to believe that the long continued use of this article as a preventive has proved injurious to health (44). Where lime-juice is

(42) This might be supposed conducive to the production of scurvy. But this disease is produced, not so much by the salt quality of provisions, as by their want of nutritious juices (BLANE on Seamen p. 289). And in moderate quantities, salt provisions are in some respects well adapted for the food of seamen (ibid). Besides, this objection may be obviated by slicing the beef, and wiping off the salt; without washing (which is found by experience to harden the meat), then stowing the slices in a jar, with alternate layers of preserved tamarinds, and keeping them in this state for several days before they are used. Mr. PHILLIPS (to whom I am indebted for this remark) having, some years ago, a long passage to *England*, during which the ship had run short of fresh provisions and water, prepared salt beef in this manner, and found that it afforded a salutary dish, greatly relished by all who partook of it.

(43) The water may be preserved from corruption by charring the inner surface of the casks in which it is contained. Might a similar practice be adopted with the tanks which are used instead of casks on board most of the country ships? If the water has already become putrid, it may be sweetened, according to the discovery of Mr. LOWITZ, of *Petersburgh*, by mixing a table spoonful of charcoal in fine powder with a pint of water, and filtering after it has stood a few minutes. Another way of preserving water sweet, is to add a pint of quick-lime to every butt, when it is filled. It may afterwards be freed from the impregnation of lime, by exposure to the air, for some time before drinking. This is most effectually done by means of Mr. OSBRIDGE's machine.

(44) See TROTTER's Med. Naut, Vol. III; p. 75, 85, 92, 192, 329, and 389.

wanting, double that quantity of *vinegar* may be substituted in its place (45), or to every hoghead of the water used for drinking, may be added an ounce (half a wine-glass) of muriatic or nitric acid (46). The mineral have not, like the vegetable acids, a tendency to impair the power of digestion; and therefore this practice may with propriety commence in the beginning, and be continued through the course of the voyage.

CLOTHING.

THE owners are obliged, by their charter-party, to furnish every seaman, who is a native of *Asia*, or of *Africa*, with clothing, agreeably to the following list, part to be provided in *Bengal*, and part in *England*.

IN BENGAL.

ONE jacket, and one pair of trowsers, with feet, of Europe red or blue cloth, and one set of the same articles of country blanketting; two caps of thick woollen; two pair woollen mittens; one pair shoes; one bed, to consist of three country blankets, sewed together, and a pillow, stuffed with blanketting; one blanket; and one canvas bag, to contain the clothes.

IN ENGLAND.

ONE jacket, and two pair trowsers, of coarse woollen cloth; two Guernsey shirts; two pair stockings; two caps; and two pair mittens, all of woollen; and one pair shoes.

THE dress here specified, appears well calculated for cold and rainy weather; only, I suspect that sufficient provision is hardly made for changing the clothes which may have got wet. And it might be advisable to supply them with a thinner dress for the milder latitudes. Every seaman should have a hammock, of country canvas.

WHEN the people are to go below, after getting wet, they should be obliged to take off their clothes on deck; and on no account should they ever be permitted to sleep with them on. If any covering be judged necessary, besides the blankets, which they have for cold weather, they might be supplied with check or blue shirts, for this purpose.

(45) Vinegar will not cure scurvy, but there are proofs of its fully retarding its progress—BROWN, p. 494.

(46) See Appendix, No. 13.

As an inducement to take off their clothes, in their watch below, the people should be furnished with oil, for the purpose of rubbing their bodies. The natives of *India* are fond of this practice. They say it protects the body against the influence of cold and damp; and is also a preservative against vermin; and there is good reason to believe, that their opinion, in both respects, is well founded (47).

ONCE a week, their clothes ought to be examined; and they should appear clean washed (48). To enable them to do so, they should have an allowance of soap, for washing their clothes (49). In warm weather, they should be encouraged to wash their bodies frequently, a practice of which they are generally fond.

EXERCISE, &c.

THE people should never be allowed to remain below, during their watch on deck; for no cause is so productive of sickness as indolence. Yet, although this ought to be insisted on, every inducement should be offered, to make it a matter of choice. For cheerfulness is one of the greatest preservatives of health. Sports, of various kinds, should therefore be encouraged, among the people, when not employed on the duty of the ship.

THE natives are, in general, much attached to their own country music; and nothing contributes more to exhilarate their spirits than this; especially when joined to the exercise of dancing. A musician or two, therefore, of their own cast, would be an useful addition to the crew.

BUT on the other hand, excessive fatigue, and want of natural rest, are powerful causes of disease, to which the men should not be unnecessarily exposed. On board of ships of war, where the crews consist of a greater number than is merely necessary for working the ship, it has been found beneficial to keep the men at three watches, instead of two, except in cases of danger or emergency (50). In addition to more refreshing sleep,

(47) See Appendix, No. 14.

(48) For the purpose of enforcing this more effectually, the men might be divided into squads; a certain number being allotted to the particular superintendence, and inspection of each Officer. This has been practised in the Navy with excellent effect—BLANE, p. 326.

(49) See in Captain WRIGHT'S letter (Appendix, No. 15,) an easy way of rendering sea water fit to use with soap.

(50) BLANE, p. 318.

this practice enables them to dry themselves more effectually, after getting wet. Whether it may, in any case, be practicable or useful with infants, I am not able to say.

VENTILATION, AND CLEANLINESS OF THE SHIP.

THE ports and scuttles, in ships that have them, should be kept open, in fair weather and smooth water. Every day, when the weather will permit, the hammocks must be carried on deck, and opened out, that the bedding may be properly aired. The deck on which the people live, ought to be well scraped, at least twice a week; but, in cold and damp weather, when it cannot be thoroughly dried, it ought not to be washed. The sides, beams, carlings, and the deck overhead, ought to be white-washed, now and then; perhaps once in a fortnight or three weeks; for calcareous substances are found powerfully to attract, from the air, its noxious parts.

IN damp weather, fires, properly secured to prevent accidents, should often be placed between the decks: and now and then let down into the well. They dry up the superfluous moisture, and keep up a constant circulation of air. Another method of obviating moisture is to rub the decks with sand, heated in an oven, or in an iron pot (51).

It has been usual to recommend, for the purpose of preventing the accumulation of contagious matter, or of destroying it, if already collected, that the place allotted for the ship's company be smoked, from time to time. Various materials, employed for this purpose, may be seen in the works of Dr. LIND. One of the most in use was gunpowder, mixed with vinegar; till MORVEAU in *France*, and Dr. J. C. SMYTH in *England*, recommended the vapour of the mineral acids, as more effectual. The process of Dr. SMYTH is as follows. Sand, heated in an iron pot, is to be put, with an iron ladle, into earthen pipkins. Into each pipkin, press down, into the sand, a small tea-cup, containing about half an ounce of *concentrated vitric acid*, (oil of vitriol). When this is sufficiently heated, add, gradually, an equal quantity of *nitre*, in powder, and stir the mixture, with a glass rod, till vapour arise, in considerable quantity.

(51) BLANE, p. 263; TROTTER's Med. Naut. vol. III, p. 233.

Twenty-seven pipkins containing about fourteen ounces of *vitriolic acid*, and as much *nitre*, were used in the first fumigation of the *Union* hospital ship, a three-decker, and half this quantity sufficed for the second time (52). so that the process is by no means expensive.

THE proofs however given of the efficacy of this practice, have not been universally deemed conclusive. I have endeavoured, in Appendix No. 15, to give a short state of the controversy; from which we see, that our chief dependence must be rested on perfect cleanliness and ventilation. These are indispensably necessary; and the attention of commanders and officers must not be, in the smallest degree, diverted from them, by fumigation, should a trial of that be deemed expedient.

IN order to prevent the accumulation of foul air, between decks, in bad weather, when the ports and scuttles are shut, a wooden tube, of a foot square inside, should be let down, through the after-part of the main hatch-way, into the hold, or into the pump-well, and should rise seven or eight feet above the upper deck; that the foul air may be discharged above the heads of the people on deck. If it passes into the hold, a ledge, or coomings, with a tarred canvas coat, may be fixed on the hatch, to prevent any water going down by the side of the tube; and when it rains, a cover of wood should be kept in readiness, to put over the top of the tube. Or, the same purpose may be effected, by making holes in the plank which covers the ship's gunwale; by which the corrupted air, rising between the timbers, will find an exit; and this may be done without weakening the side. The air, discharged by either of these vents, has in some instances been observed to be so offensive, that they could hardly be approached without danger of suffocation; which clearly evinced their utility in purifying the atmosphere below (53).

DURING the stay of the ship in *England*, the people ought to be kept, as

(52) Medical annals, vol. I, p. 110 — SMYTH on nitrous fumigation, p. 61.

(53) I am obliged for this hint to Captain WRIGHT, of the *Superb*, whose liberal communication on the subject of the sickness on board of his ship, calls for my thankful acknowledgment. A similar contrivance, used on board the *Nymphe* frigate, is described by Dr. BLANC (p. 266) "A square wooden pipe, of about nine inches in the side, coming from between decks, running along the side of the ship, and opening over the gunwale of the fore-castle" They all act on a principle similar to SUTTON's pipes, only with this difference, that he put in motion a current of air, by the rarifying power of fire; whereas here, the foul air ascends, merely because azotic and hydrogen gases are specifically lighter than atmospheric air—See Appendix No. 15:

much as possible, on board, for, on shore, they are led into various excesses, which prove destructive to their health.

EVERY ship, outward bound, ought to touch at the *Cape*, for refreshment; if it can be done without very evident and material injury to the object of her voyage.

MEDICAL TREATMENT.

THE precautions above laid down, will be found strongly preservative against both fevers and catarrhal or pulmonary complaints. On the cure of these diseases, not having any thing new to propose, it would be unnecessary to detain the medical reader with any mention of the subject. But as, on board of ships manned with sailors, the care of the sick frequently devolves on those who are strangers to medical science, it may be useful to lay down a few plain rules, for their direction.

ON THE CURE OF FEVER.

As early as possible after the first attack, the contents of the stomach and intestines should be evacuated. This may be done by a solution of emetic tartar. Four grains may be dissolved in half a pint of water, and two spoonfuls given every half hour, till it excites vomiting.

If this medicine has been given early in the forenoon, and has not operated also by stool; or, if the operation in that way has been trifling, six or eight grains of calomel may be given, the same evening, made up into the form of a bolus, with a little common sirup, or thick conjee. This will effectually loosen the mucus of the intestines, which retains the offensive matter; and it may be discharged, in the morning, by a few small doses of a solution of salts. Dissolve one ounce of Glauber's salt, and one grain of emetic tartar, in half a pint of water, and give four spoonfuls of this solution, in a cupful of warm conjee, every two hours, beginning early in the morning, till copious evacuations by stool have been procured.

AFTER the operation of this laxative, the patient should be nourished, by giving a small cupful of panada, of sago or conjee, with the addition of a little wine, sugar, lime-juice and nutmeg; repeated at proper intervals through the course of the day.

The second evening, the calomel should be repeated, and the laxative

on the following morning. But, after its operation, if the fever has remitted, the patient must take a drachm of bark, finely powdered, and repeat it every two hours, till eight doses have been taken.

The next, which is the fourth day, the bark must be taken in the same manner. But in the evening, the calomel must be repeated, with the laxative solution in the morning; after the operation of which, the bark is to be resumed, and taken for two days, as before.

The calomel and morning laxative are then to be given, and so on, alternately with the bark, till the disease is removed (54).

Should the fever not have remitted on the third morning; after copious evacuations have been procured, the following draught may be given in the evening.

TAKE of antimonial wine,	-	-	-	Ninety drops,
Laudanum;	-	-	-	Thirty drops,
Water,	-	-	-	Three spoonfuls.

This will probably give a good night's rest, with remission of the fever; and the course of bark must be begun early next morning.

This may be done, even if the remission is not very distinct; as, if the bark is continued, it will, in all probability, moderate the violence of the succeeding paroxysm.

But, if it is rejected, or fails in producing the expected salutary effect; two grains of calomel must be given, every three hours; supporting the strength with the liberal use of wine, till the fever is brought to remit; when the bark may be given as before recommended.

In the convalescent state, great attention should be paid to the restoration of the patient's strength, by nourishing diet, and the giving of bark, in small doses. This remark is equally applicable to the case of patients recovering from other acute diseases; for weakness, from preceding distemper, greatly predisposes towards the dropical swellings, which have lately proved so fatal, on board the country ships.

To prevent relapses, a few doses of bark should be given on the approach of the spring, for two or three successive revolutions of the moon.

(54) The reader may see this practice detailed, and the reasons on which it is founded, scientifically explained in Dr. BALFOUR's treatise on putrid intestinal remitting fevers; p. 106—131.

PULMONARY COMPLAINTS.

UNDER these, I include catarrh, or what is commonly called pleurisy and peripneumony. Into their several varieties, or the peculiar treatment adapted to each, it would be superfluous to enter in this place. Suffice it to say, that when the symptoms are moderate, the same plan of evacuating the bowels, and of afterwards supporting the strength, by light nourishment, that has been recommended in fever, will prove sufficient for the cure. Only, in this case, more particular attention is necessary to defending the chest from cold; and means should be used to keep up a gentle perspiration (55). For this purpose, ten or fifteen grains of nitre, with three or four grains of salt of hartshorn, may be taken, in a draught of barley water, or thin conjee, every three or four hours; and the feet may be bathed in warm water, two or three times a day.

When the fever, the pain of the chest and difficulty of breathing are severe, blood may be drawn freely, especially in the beginning of the disease; and should the pain still remain obstinate, blisters should be applied to the feet of it, and repeated if necessary. But, if the pulmonary symptoms come on at an advanced stage of fever, or there has been great debility from the beginning, the lancet must not be used. For these complaints are sometimes combined, in a cold climate, with the low, ship, jail, or hospital fever, in which bleeding would be destructive (56). Our chief resource, in this case, must be on repeated blisters, joined to the proper nourishment of fever.

The same attention to nourishment, in the convalescent stage, must be paid here, as in the case of simple fever.

HEPATITIS,

OR inflammation of the liver, is to be distinguished by pain under the ribs of the right side, increased by pressure on that part; sometimes extending to the top of the shoulder. It is attended with fever, and there is generally an uneasiness in lying on one of the other side, a difficulty of breathing, and a dry cough.

(55) Vide BALFOUR l. c. p. 134—139.

(56) See TROTTER, Med. Naut. I, p. 257.—III. p. 166—204.

When the pain and fever are considerable, blood may be drawn freely in the beginning of the disease, after which, the same plan of evacuation as directed in cases of fever, should be vigorously followed up, during the first three or four days. If the symptoms are moderate, those evacuations will be sufficient, and bleeding may be omitted. Blisters may, at the same time, be applied to the seat of the pain. And if any complaint remain after that period, two grains of calomel should be taken, or a drachm of strong mercurial ointment rubbed into the body, or the inside of the legs and thighs, every morning and evening (57). A foretaste of the mouth must thus be excited, and kept up, till the symptoms are removed.

An irregular intermittent fever, obstinately resisting the bark; or a variable state of the bowels, sometimes relaxed, sometimes with frequent inclination but scanty discharge; the appetite capricious, sometimes craving, at others loathing all food: though unattended with pain, give reason to suspect a diseased liver; and, in all such cases, after first clearing the bowels, immediate recourse should be had to mercury, as before directed.

S C U R V Y.

The appropriate remedy of this disease, established by long and extensive experience, is the recent juice of oranges, lemons, limes, or shadocks. If these fruits, or their juice, preserved as before directed under the article of diet, can be obtained in sufficient quantity; two or three ounces should be given daily in slight cases, and as far as a pint daily in those which are severe, with a due proportion of wine and sugar. Should the acid be found to irritate the bowels, the quantity of wine and sugar may be increased. This, with comfortable nourishment, as formerly described, will be sufficient for the cure.

If lemon-juice cannot be procured, at the time of the ship's departure from *England*; the concrete, or crystallized juice, may be obtained in its room. One ounce of this is equal to a pint of the recent juice; and a

(57) For reasons that will be assigned in Appendix No. 13, it would probably be better to give one grain of calomel every four hours. And with a little attention, this might be easily effected. For, as this period coincides with that in which the watches are relieved, those who are under courses of mercury, or other medicines taken in periodical doses, if able to go on deck, might be mustered there, at the relief of each watch, and made to swallow their medicines, in the presence of an officer. Those who are acquainted with the habits of lascars, will readily see the necessity of this precaution.

pleasant lemonade may be prepared, by dissolving forty grains of it, in a pint of water, with a sufficient quantity of sugar (58). Its efficacy, in the cure of scurvy, has lately been established, on extensive experience in the navy (59).

If neither of these remedies should be on board, we must try the mineral acids. To a quart of spruce beer, or the same quantity of treacle and water, add sixty drops of nitric or muriatic acid. Shake them well together, and give a tea cupful every six hours (60.) Whatever acid is used for the cure, a nourishing diet of fresh meat, with tea, sugar, molasses, and such other articles, recommended as preventives, as the ship may afford, is indispensably necessary. And this must be extended, not only to those who are unable to do duty, but also to all who appear to be drooping. In order to discover these, whenever the disease shews itself among the crew, they ought to be regularly mustered; and those in whom unusual listlessness, or a swelling of the feet is perceptible, should be treated as scorbutics. The lascars, either from an indolence natural to them, or a dislike to medicine, often continue on duty, for several days after this symptom (which is a common precursor of scurvy) has appeared; and it is superfluous to remark with how much greater facility the disease is checked in its commencement, than cured, at a more advanced stage.

THE stiffened limbs may be bathed, or sponged, with warm water, containing as much nitric acid as can be borne without pain. And if there be ulcers, they may be dressed with pledgits dipped in the same, or in a mixture of one part lime-juice and two or three of water.

The gums, when spongy or ulcerated, should be frequently washed with a solution of alum in a decoction of *Catechu* (61).

DROPSICAL SWELLINGS.

FROM the analogy observed in page 7, between this disease and scurvy, and the influence which deficient nourishment appears to have had in its

(58) NICHOLSON'S Journal, Vol. II, p. 45.

(59) TROTTER'S Medicina Nautica, Vol. III, p. 90, 391—402.

(60) See Appendix No. 13. I have directed the acid in larger quantity than recommended by Mr. BROWN, and it may probably be expedient even to increase that above stated.

(61) Formerly known to druggists by the name of *Teria Japonica*; in India named *lut* or *kutch*.

production, it will be proper, on the first appearance of the complaint, to give the same remedies which have been above recommended in scurvy. To these must be joined a nourishing diet, of which broths of mutton or fowl should form a principal article; and an adequate proportion of wine or beer. If this appear to give relief, the quantity of acid may be increased, and persisted in till the cure be completed.

BUT if it do not succeed, the following plan must be resorted to. Let one of the following powders be given, every hour, till plentiful evacuations, by stool, have been procured.

TAKE of calomel,	-	-	-	twelve grains,
Powder of jalap,	-	-	-	one drachm,
Cream of tartar.	-	-	-	two drachms,
Powder of ginger,	-	-	-	six grains,

Mix them well together, in a glass mortar, and divide the whole into eight doses.

DURING the operation of the medicine, the strength should be supported, by giving nourishment, in small quantities; and thirst may be allayed by drinking weak punch, made with cream of tartar, which will have the good effect of promoting the discharge of urine. On this account, gin is probably deserving of a preference over other spirits, as an ingredient in the punch.

THIRTY or forty drops of laudanum may be given that night. The following day, if the sick do not complain of too much fatigue, the same process may be repeated; otherwise, one of the following medicines may be given on that day, and the purging powder repeated on the third.

DECOCTION OF BARK.

Take of peruvian bark, in powder, one ounce; water, five gills, boil for a quarter of an hour, in a close vessel, and strain the liquor through a woollen cloth, while hot.

When cold, add elixir of vitriol, or weak vitriolic acid, thirty or forty drops. Give a wine glassful three or four times in the day.

BITTER INFUSION.

Take of Gentian root, sliced,	half an ounce;
Dried peel of seville oranges,	one drachm;
Coriander seed,	half a drachm,
Proof spirit,	one gill,
Water,	one pint,

FIRST pour on the spirit, and three hours after, add the water;
let it stand for a night, and strain.

or,

Take of camomile flowers, half an ounce;
Boiling water, half a pint,
Let it stand half an hour; then strain it, and add four table
spoonfuls of brandy, and one drachm of salt of tartar.

Four spoonfuls to be given, four times a day.

THESE medicines are to be given alternately with the purging powders, till the water is completely evacuated. At the same time, a drachm of mercurial ointment may be rubbed in daily, till the mouth is slightly affected.

The bark decoction, with nourishing diet and wine, will then finish the cure.

DURING the whole period of the disease, the food should be of a nutritious quality, and contain a good deal of garlick, ginger, and capicum.

WHEN the difficulty of breathing is severe, or accompanied with vomiting or spasms, the patient may take a full dose (forty or fifty drops) of laudanum; and have a blister applied to the chest. Two parts of strong mercurial ointment may be thoroughly mixed with one part of pure opium; and from half a drachm to a drachm and a half of this, rubbed on the stomach, or inside of the thighs, once or twice a day (62).

As much exercise as the patient can support should be strictly enjoined.

(62) I am indebted for this hint to Mr. CHRISTIE. See his very interesting and instructive letter in Appendix No. 10, in which, and the papers annexed to it, the medical reader will see a detail of the practices which have been found most successful in this disease. In the text, I have considered it necessary to confine myself to such as may safely be entrusted, to those who are unskilled in medicine. With the same view may be consulted Mr. DICK'S paper in medical commentaries vol. 10. And the stimulating course recommended by Dr. MCGENNIS, in the medical and physical journal (vol. IV, p. 212, &c.) appears well adapted to cases of this kind, which originate in high debility.

The legs, and the body, should be rubbed, two or three times a day, with a flannel cloth, or with a hand, dipped in simple, or rather in camphorated oil.

The quantities of medicines that may probably be required for one hundred men, will be found in the Marine Surgeon's report, Appendix No. 1. But as most of these are obtained at a much easier rate in *England* than in *Bengal*, and as experience has shewn that less sickness prevails on the passage to *Europe* than on the return, it will be sufficient to provide in *Bengal* one-third part of the quantities there specified, and in *England* to complete the remaining stores to two-thirds of the same.

To those I would recommend that the following be added ;

Salt of hartshorn,	-	-	-	1 lb.
Nitric acid,	-	-	-	2 lbs.
Muriatic acid,	-	-	-	2 lbs.

AND if a trial of fumigation should be deemed expedient,

Strong vitriolic acid,	-	-	2 lbs.
Alum,	-	-	2 lbs.
Catechu,	-	-	4 lbs.

APPENDIX No. I.

REPORT of Mr. THORNHILL, Master Attendant, and
Mr. HUNTER, Marine Surgeon.

To JOHN N. SEALY, Esq.

Acting Secretary to the Board of Trade.

SIR,

IN conformity to the instructions of the Board of Trade, communicated to us by your letters of the 19th May and the 2d Instant, we have carefully inquired into all the circumstances attending the voyages of the ships *Mornington* and *Arran*, which appeared to us capable of throwing any light on the lamentable mortality which took place on board of those vessels. To place distinctly before the Board the result of our investigation, we shall first present them with a narrative of the facts; secondly, determine the nature of the disease which proved so fatal to the crews of both ships; thirdly, endeavour to assign the causes which probably occasioned the disease; and fourthly, point out the means which, to the best of our judgment, appear calculated for the prevention or cure of a similar distemper.

CAPTAIN KELSO, the commander of the *Mornington*, attended with the ship's log book; we also examined his first, second, and third officers, the surgeon, and one of the tindals; and Mr. YOUNG, a passenger from *England*, obligingly communicated to us the result of his observations. From these different sources, the following narrative was collected.

THE *Mornington* sailed from the mouth of the *Ganges*, on the 23d of February 1800, with eight Europeans, including the commander and officers, ten native Portuguese, and seventy-two lascars and sepoys. From the 6th to the 16th of May off the *Cape*, had fresh gales, with hazy weather and rain. Yet no sickness appeared among the crew at this time; arrived at *St. Helena*, June the 8th, left it the 17th. Hitherto the crew continued healthy, but towards the end of July, in latitude 34 North, one of the lascars was taken ill with a pain in his bowels, followed by a swelling of the body, which retained the impression of the finger, and by difficulty of breathing. This man died on the 29th of August, in the mouth of the

Channel; and the next day died a sepoy, of a week's illness, with the same symptoms. A few lascars were ill with the same complaint when the ship arrived in port, but speedily recovered. September 12th, anchored abreast of *Gravesend*. None of the Europeans were ill on the passage home, nor any of the native Portuguese except one man, who died of a fever on the 5th of June.

IN *England*, shipped in addition to her former crew, twenty Europeans, seven Portuguese seacunnies natives of India, and nineteen lascars.

SAILED outward-bound on the 15th December. Feverish complaints, usually termed bilious, prevailed among the crew, before crossing the line to the southward; these were cured by evacuations with tartar emetic. On the 28th February, off *Gough's Island*, in latitude 40 South, a lascar was taken ill, with swelling, which began in the legs, spreading rapidly up to the body, and he died the next day.

THE weather before reaching *Gough's Island* was clear, through cold; afterwards it became hazy with rain; and then the numbers of sick increased fast: on the 28th March, made the Island of *St. Paul*, and in this interval twenty-eight men died.

GOT the Pilot in *Bengal* river May 2d, when the whole number of deaths amounted to fifty-six. Almost all the native crew, lascars and sepoys, were afflicted with the distemper on their arrival, but they soon recovered on shore. The Europeans and native Portuguese were exempted from its attack.

WITH respect to the progress of the symptoms, the accounts given by different observers do not exactly agree. According to some, the first was a swelling of the feet, generally pitting on pressure. While it was confined to the feet, which was sometimes for a day or two, the men were able to go about, and did not complain. But the swelling rapidly extended upwards, attended with difficulty of breathing, and after it reached as high as the stomach, the sick inevitably perished in the course of a day. For some time before death, they had severe pain at the pit of the stomach, increased by pressure, and about this period many had bilious vomitings.

THE whole duration of the complaint, from the first seizure to its fatal termination, was often comprised within the space of two days.

ACCORDING to other accounts, the swelling of the feet was preceded by

by pains of the knees, ankles, and elbows, difficulty of breathing and pain of the bowels. Others allege that a pain at the region of the stomach, with hardness and swelling of the part, occurred before the swelling of the feet.

THE face was swelled and bloated, particularly the cheeks, temples and over the eyes. The patients had much thirst, during the whole disease, but greatly increased a little before death. The urine was scanty and voided with difficulty. They were in general colicive, but often concealed this, as long as they could, from an aversion to medicine.

THE gums were perfectly sound, in every respect; no swelling sponginess or bleeding. There were no spots or sores on the limbs, nor on any part of the body.

VARIOUS remedies were tried for the cure, and we find some discordancy in the reports made of their effects. The pain and difficulty of breathing, in some cases, led to a suspicion of inflammation; for the removal of which the patients were blooded pretty freely. They were relieved for a time, but this operation did not appear to accelerate or retard the fatal termination.

PURGING with jalap is said to have given some relief; but this does not seem to have been carried to any extent, or persevered in.

CALOMEL and mercurial frictions were used, in some cases, till the mouth was affected; but this did not at all relieve the complaint, or reduce the swellings.

PERUVIAN bark, combined with elixir of vitriol, was given in several cases, and we find the greatest difference in the reports on the effect of this remedy. It is allowed, by all the observers, to have had some effect in checking the progress of the disease; but while some allege that certain patients, who had the disease in a violent degree, recovered perfectly by its use, during the voyage; others assure us, that no person, who had the disease so severely as to be incapable of doing his duty, recovered so far as to return to the performance of it, before the ship's arrival in port.

THE provisions of the lascars consisted of rice, as much as they could eat, of dal (or split pease) while it lasted, but during the two last months of the voyage there was none of this remaining, and of salt butter in place of ghee. In the beginning of the voyage, they had salt herring in

the proportion of two fish per man weekly, but after the sickness began to appear, Captain KELSO stopped the allowance of herring and gave them a sheep now and then. The sick had fresh mutton broth in the afternoon; and congee in the morning, with sugar and wine. The crew were not restricted to any allowance of water. Some of them had onions and capicum, but these articles were not furnished from the ship's stores.

THE lascars were comfortably clothed, they had slops served four times during the voyage, consisting of jackets and trowsers of blue board cloth. They were also supplied with hammocks, one to each man. But it appears that the greatest attention is hardly sufficient to enforce cleanliness among those people. The persons of the generality are represented as extremely filthy; many had not taken off their clothes for several months after leaving *England*, and the stockings of one man, when taken off, were found to have eroded the surface of the leg, in several parts.

THE berth of the lascars was on the gun-deck, from the main hatchway forward the whole way. There were no scuttles, and the ports, though formed in the side, had never been cut out, but the place was ventilated by wind sails at the fore and main hatchways. Some air also had access by the gun-room ports. The deck was frequently washed and sprinkled with vinegar, but seldom smoked, for fear of accidents from fire. Every day, when the weather would permit, the hammocks were carried on deck to air. But the air was much confined, and the place, while the crew was on board, was very offensive. By its closeness, perspiration was copiously excited while they remained below, and was liable to sudden suppression when they came on deck in cold and wet weather. The lascars were at two watches; never all on deck except on emergency.

THE Europeans were lodged on the gun deck, abreast and abaft the main hatch, so that the ventilation in their berth was nearly the same as in that of the lascars.

THE provisions of the Europeans consisted of salt beef and pork, pease, flour, biscuit, and for six weeks after leaving *England*, potatoes. In this last article the lascars also shared. The Europeans had a dram every morning. The diet of the native Portuguese was the same as that of the Europeans.

THE *Arran* sailed from *Calcutta* on the 15th March 1800, having twelve Europeans on board, and forty lascars. She arrived at *Falmouth*

on the 1st of September. The crew were healthy on the passage home, and lost only three men; one died of a fever, and two of an eruptive complaint, which they had before leaving *Bengal*. In *England* she took in forty-nine native passengers, and sailed from *Portsmouth* on the 7th of December.

ONE man died on the 17th December, after an illness of six or seven days. He first complained of pain in his breast and cough, these were followed by swelling of the feet, which gradually ascended up his legs and thighs, till it occupied the abdomen, which was distended to an enormous size. It was then attended with great difficulty of breathing, which did not exist before, notwithstanding the pain in his chest. He died on the third day after the swelling reached the belly.

BEFORE his death, several others were affected with the pain of the breast, but not with swelling. This symptom did not appear in those persons till the ship got into warmer weather.

A SECOND died on the 31st, off *Madeira*, with cough, purulent expectoration, and other symptoms of consumption. January 13th, in latitude 9 North two men died, with swellings, which were preceded by no other complaint, than, for a day or two, an aversion to motion. The swelling was attended with stiffness and numbness of the joints. From the first appearance of swelling in the feet, it extended, in three days, to the abdomen, and chest. The face, in some, was bloated. None of them had any affection of the gums, or scorbutic ulcers, though some (but not of those who died) had sores, proceeding from a kind of itch. It was observed, that while the sick could be prevailed on to take exercise, the disease made a slow progress, but it advanced with hasty steps to the fatal period, from the moment that they indulged their propensity to rest.

On the 1st of March, arrived at the *Cape*. In this interval the deaths were very frequent, sometimes two or three in a day. Particularly on the 22d, 23d, 24th, and 25th February, in latitude 40 South, had calm and clear weather: at this time the people died three or four daily. The number of deaths before arriving at the *Cape*, was thirty-five; twenty-eight were sick at that time, of whom six died in hospital at the *Cape*, the others speedily recovered. The complaint thus first appeared on getting into warm weather; after being sometime in that climate, the sickness seemed to diminish, but rapidly increased on getting into a colder latitude.

SAILED from the *Cape* on the 16th March, and arrived in the river 25th May; during this time none of the crew died, nor did the swellings appear among the people.

THREE of the *Europeans* had fevers, but none of them were affected with the swellings.

ON dissection of the body of one man, who died of the disease, a quantity of water, but not exceeding three quarts, was found in the cavity of the abdomen. The cellular substance, all over the body, was much distended with water. The liver, kidneys, stomach and intestines had no morbid appearance. The thoracic viscera were also perfectly sound, and no water, exceeding the natural quantity, was found in the chest, nor in the pericardium.

THE treatment of the disease was begun by emetics, followed by a purge of jalap and calomel, after which they had bark and wine twice a day. Scarifications of the feet and blisters were used, which discharged a great quantity of water, and gave considerable relief.

THE lascars, during their residence in *England*, had fresh mutton with greens for their provision, and beer for drink: after leaving *England*, they had rice; and for a time salt herrings, but these were soon left off, on the supposition of their being hurtful. Most of them had onions or garlick of their own; and they were supplied with capsicum by Captain BARKER, who carried a quantity from *Bengal* for that purpose. They had small beer to drink, for a fortnight after leaving *Portsmouth*, and plenty of water during the voyage.

OUTWARD bound, they were supplied with cloth jackets and trowsers. After being exposed to rain, they were obliged to put off their wet clothes; and dry suits were served to them on those occasions. But, from the carelessness of those people, much clothing was lost or destroyed. In warm weather they were made to wash themselves frequently: but in cold weather it was very difficult to keep them clean.

THEY were lodged on the gun deck, where there were no ports or scutles; air being only admitted by the hatches; but in warm weather they were generally on deck.

WHEN a disease not febrile occurs at sea, the first suspicion very commonly falls on *scurvy*; and some of the symptoms above described,

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such as pain and stiffness of the joints, difficulty of breathing, lassitude and aversion to motion, might give countenance to such a notion in the present instance. But the farther progress of the distemper, which proceeded to its fatal period without producing any affection of the mouth, any spots or ulcers, sufficiently proved that the disorder was of a different nature.

MR. CRAWFORD, formerly Surgeon of the *Earl of Middlesex* India-man, has described a disease, in many respects resembling that which is the subject of our present investigation, which prevailed among the crew of that ship, on her passage from *China* homeward in 1770-1, during which they suffered a great want of fresh provisions, and of good water. The progression of symptoms was as follows; tightness across the breast, giddiness on increased motion, feet and legs swelled and pitting on pressure; want of appetite for solid food, great thirst; swelling extending up to the belly, with increased difficulty of breathing, which terminated in a fatal suffocation. *Scurvy* was at first suspected, and the treatment was accommodated to that disorder; but without success. At length, on dissecting the body of one who died of the disease, its cause was found to be an enormous enlargement of the liver. This discovery led to a successful method of practice.

THE symptoms here described, resemble so nearly those exhibited by the sick on board of the *Mornington*, that notwithstanding the resemblance to dropsy, a suspicion might remain; that the disease, in these last, was the same with the former. But the dissection of a man on board the *Arran* proves the distemper to have been really dropsy; that patient's case we may pronounce to have been chiefly *anasarca*; for the small quantity of water, found in the cavity of the belly, seems totally inadequate to constitute a fatal *ascites*. Yet, notwithstanding, in this instance, no water was found in the cavity of the breast, we think there is reason to believe, that could dissections have been repeated (to permit which it seems the lascars were very averse) it would have been found in that cavity; for the puffy swelling of the face is most frequently observed in this species of dropsy; the progress of this disease, was much more rapid than that of dropsy in general; and we can easily believe that such an accumulation will most speedily terminate in death, when it affects

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the seat of the vital organs; accordingly, we find in SAUVAGES, a distinction of hydrothorax into acute and chronic; the former of which kills after a short illness; and, in two instances, which have come to our knowledge, of dropfies prevailing epidemically, wherein also the disease was of short duration, the water was found in the cavity of the chest. The first of these, which affected the troops in the *Carnatic*, in the years 1782 and 1783, as described by Mr. DICK, in the 10th volume of Medical Commentaries, very exactly resembles the disease which is now the subject of our inquiry. The second lately prevailed in His Majesty's 80th Regiment at *Trincomalé*. It began with numbness in the calf of one leg, or of both. This was followed by œdema of those parts of the body. When it reached the chest, it caused a sense of suffocation, which soon proved fatal: on dissection, water was found in the cavity of the thorax and of the pericardium. The duration of the complaint was various; in the most rapid cases, a fatal termination took place within twenty-four hours of the first seizure.

As the means to be used, for the prevention of the disease, must greatly depend on guarding against the causes, which we may suppose to have produced it, we shall, to avoid repetitions, unite these two parts of our subject.

AMONG the usual causes of dropfy, the following appear to have operated in the present instance.

I. GENERAL DEBILITY. The rapid progress of the disease, from the first appearance of swelling, affords a convincing proof, that this state must have existed in a high degree. And we can trace its origin to various sources.

First. Deficient nourishment. In mentioning this cause, candour requires us to state that no complaint on this head, has been made against the commanders or officers of those ships: the provisions which, by the custom of the service, are supplied to the people, were abundant, and of a good quality; and those among the native crew whom we examined, bare a grateful testimony to the humane solicitude manifested by their commanders and officers towards the sick. But rice and dāl do not of themselves afford sufficient nourishment; the salt herrings appear to have been of indifferent quality, and were soon left off, and the salt butter probably could not be used in such quantity as to supply the place of ghee. The natives on shore, mix with these articles of food a certain proportion
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of onions or garlic, of ginger and capficum ; and in their voyages from port to port in *India*, they generally carry a fufficient flock of thefe feafonings. Thefe communicate to their food a ftimulating power, in which it would otherwife be deficient. The want of them has been known to produce fcurvy in people who never taftef falt provifions. And, with thefe articles in the prefent inftance, many of the people were unprovided. One ftiking fingularity is, that during the voyage to *England*, although the fhips encountered more bad weather than outward bound, the people enjoyed good health : this fatal diftemper appeared only in a few cafes, and that towards the clofe of the voyage ; whereas it began to fpread very foon after leaving *England*. Two circumftances feem to have contributed to this, but we will not venture to pronounce how far they were adequate to the effect. In the firft place, on the voyage to *England*, moft of the people were probably fupplied with the condiments before mentioned ; and fecondly, during their refidence in *England*, they were accuftomed to a more nourifhing and ftimulant diet than in their own country. Now, it is a truth, well known to phyfiologifts, that the debility produced by the with-holding of ftimulus is in proportion to the degree of ftimulus to which the body had, for fome time before, been habituated.

THE improvements we would recommend on this head are,

1ft. That onions, garlic, ginger, and capficum, fhould be regularly furnifhed to the native crews, in fuch proportion as they are accuftomed to ufe them : of the two laft articles a fufficient flock fhould be provided in *India* to ferve during the voyage out and home. The onions may be preferved by cutting the root off to the quick, and fearing the place with a hot iron ; or by running a red hot iron from the root to the top of the onion.

2d. Fifh prepared with tamarinds, as commonly praftifed in this country, would probably be more nutritious, more grateful and wholesomer than that which is falted ; a fufficient quantity of tamarinds might be carried from *India* to prepare in *England* a flock of fifh for the voyage.

3d. Wheat boiled up into a melf with fugar, &c. might occasionally be fubftituted inftead of rice.

4th. Portable foup was found by Captain COOK, in his voyages round the world, to furnifh many comfortable and nourifhing melfes ; it was boiled with peafe, or with vegetables for dinner, and with wheat or oatmeal for breakfast.

5th. Some of the cheaper pickles might be supplied, as a grateful addition to their food, and a preservative against scurvy.

6th. As we have seen that the lascars, during their residence in *England*, are accustomed to drink beer, we can have no hesitation in saying that a certain proportion of that liquor should be served to them during the voyage out. We see that on board the *Arran* they were supplied with it in the early part of the voyage; but the stock laid in was insufficient: on this article, we may take notice of an improvement proposed by Dr. TROTTER, that the beer, for sea use, be made of double strength, and served two quarts instead of a gallon.

Second. It is a fact well known, that no cause is more productive of debility than *the respiring of an air which is deficient in oxygen*. The air in the berth of the lascars must necessarily have been of this description, and the only remedy is to effect a more complete ventilation. Ports ought therefore to be cut out, in all ships that are high enough to admit of it; and kept open in fair weather and smooth water. Scuttles are now cutting in the sides of the *Mornington*, but those are not sufficient to ventilate the tween decks properly.

Third. Preceding Disease. The crew of the *Mornington* had fevers, and those of the *Arran* pulmonary complaints. In the former case, the prudent administration of bark and nourishing diet, to convalescents, might serve to secure them against the consequences of a debilitated constitution. Similar methods would also be requisite with the others, after the complaints of the breast were removed; and those complaints might probably be prevented by attention to avoid that which we come next to consider, as being of itself a powerful cause of dropfy viz.

II. SUPPRESSED PERSPIRATION; brought on by exposure to cold and moisture, after remaining some time in a close and warm situation. To this might also contribute the impurity of the air in the lascar's berth; as such air, being already impregnated with human effluvia, cannot be supposed to carry them freely off. The remarkable inattention of those people to cleanliness in their dress, must powerfully assist the operation of those causes. But we apprehend, that the means of obtaining cleanliness have been, in some instances, misapplied, and that the frequent washing of decks, in situations where they could not be thoroughly dried, as between decks, where neither

ports

ports nor scuttles were open, must expose the people to a damp atmosphere, which is known to be a powerful cause of dropsy. The following reflections on this head, from an officer of such experience and well earned reputation as Sir ROGER CURTIS, carry so much higher authority than any thing we could urge, that we shall give them in his own words, as published by Dr. TROTTER.

“ THE nature of cleanliness too is often misunderstood ; and I know of
 “ nothing of that kind which is so much mistaken, as the too frequent
 “ and indiscreet drenching the decks, and more especially those where
 “ the people sleep, with water, and particularly in cold latitudes, during
 “ the winter. By this means I have known dreadful sickness introduced;
 “ and I have known it removed by a contrary practice. It would be
 “ deemed extravagant to advance an opinion, that the decks should never
 “ be washed ; but I feel no reluctance in making a direct assertion, that it
 “ were far better that they should not be washed at all, than with that
 “ want of discretion and precaution which so generally prevails. It
 “ is an error that has caused the deaths of thousands ! Certain it is,
 “ that the deck cannot be kept too clean, but they should be made so
 “ by other means than washing, except the weather be such as will soon
 “ cause them to dry, or that you have means of drying them by
 “ fires. This observation applies to every deck in a ship, but in a
 “ particular manner to those where the people chiefly reside, or
 “ from whence the humidity particularly affects them ; nor should they
 “ ever be permitted to go below after a washing, until the decks are per-
 “ fectly dry ; for it is a fact universally admitted, that moisture is the
 “ chief predisposing cause to almost every malady with which a seaman is
 “ afflicted. It particularly induces scurvy, and putrid fevers. Seamen
 “ are naturally indolent and filthy, and are merely infants as to discretion
 “ in every thing that regards their health. They will assist in washing
 “ decks, and sit the whole day afterwards, though wet thereby half way
 “ up the legs, without shifting themselves, to the great injury of their
 “ health. They should therefore be compelled to put off their shoes and
 “ stockings, and roll up their trowsers, on those occasions ; which will
 “ not only cause their feet to be dry and comfortable the rest of the day,
 “ but necessarily cause a degree of cleanliness, which otherwise would be
 “ disregarded,

“ disregarded. The practice which has lately been adopted, of having
 “ stoves, with fires, placed occasionally in those parts of the ship where
 “ the men reside, and in others subject to humidity, is of the utmost im-
 “ portance to the health of the people, and should never be omitted in
 “ damp weather.”

“ GREAT pains should be constantly taken that the men are cleanly in
 “ their persons, and that they are furnished with all necessary cloathing.”

“ THE cleanliness of the people’s bodies should be particularly attended
 “ to, as well as their cloaths and bedding. They should therefore be
 “ compelled to wash themselves, in tubs allotted for that purpose, which
 “ will not only contribute to prevent illness, but will also act as a bracer,
 “ and render them less liable to catch cold.”

“ HAVING but little judgment of what is fitting for them in any situa-
 “ tion, they should not be permitted to go too thinly clad, in severe wea-
 “ ther, nor too warmly when it is hot. They are too indolent to suit
 “ their dress to circumstances, unless they are forced to do it, nor is any
 “ thing more common than to see some of them, with a pair of thin linen
 “ trousers on, in the severity of winter, and a pair of greasy woollen ones
 “ in the hottest weather.”

“ WHEN their watches expire, in rainy weather, they should be obliged
 “ to take off their wet shirts before they get into their hammocks, which
 “ from laziness as well as fatigue, they will not do but by compulsion.
 “ Nothing can be more pernicious than going to sleep wrapped up in wet
 “ linen, and it causes also their bedding to be damp and unwholesome,
 “ for some time afterwards.”

In another place, describing the means employed for eradicating a con-
 tagious fever on board the *Brunswick*, he says, “ The deck was seldom
 “ washed, and never but when the weather was such that the people could
 “ remain upon the upper deck, until it was perfectly dried by the fires,
 “ and the natural current of the air; nor was any person whatever permit-
 “ ted to go below, under any manner of pretence, until the general per-
 “ mission for it was given. When the deck was not washed, it was kept
 “ perfectly clean, by other means; and flops about the decks, and every sort
 “ of dampness was especially guarded against. The sides, beams, carlings,
 “ the deck over head, and every part of the tween decks were white-washed,
 “ twice or thrice, during the course of the disorder.”

THE

The causes above enumerated, are the same that usually give rise to scurvy at sea. And we must freely confess our inability to assign reason why, in these instances, a dropsy rather than scurvy was produced.

ONE circumstance, in the narratives of both voyages, is remarkable, and well deserving of being attended to, with the view of prevention. The sickness on board the *Mornington* began a little before doubling the *Cape*; in the *Arran* it commenced earlier, but was completely subdued by touching at that place. So that we may reasonably suppose, had the *Mornington* stopped there, she would have lost very few; and that had the *Arran* not done so, she would scarcely have brought one of her native crew alive to *Bengal*. When we consider, in addition to this, the distress from scurvy, sustained by some of the Indiamen of last season (1), how can we hesitate in saying that every ship, on her passage out, ought to put in at the *Cape* for refreshment?

On the cure, we have only to observe, that the disease being so rapid in its progress, and at the same time attended with so much debility; the most speedy and effectual means must be used, for exciting the action of the absorbents, and evacuating the fluids which they have taken up; but to those means must be joined such as are calculated to support the strength of the system.

In the history above delivered, we observed, that evacuations were very sparingly used; and the reason assigned for this was an apprehension that debility would be increased by their use. But it is well known, that the primary action of cathartic medicines, especially of those termed drastic, is to stimulate (2). The debility induced by them is of that kind which Doctor BROWN distinguished by the term *indolent*; or it is the collapse of Doctor CULLEN, which invariably follows increased excitement, after the exciting cause is withdrawn. It may therefore be prevented, by giving the medicine in small doses, repeated at short intervals, so as to renew its stimulating action, at the same time that the evacuation is carried on. This was well known to Doctor SYDENHAM, who directs that cathartics, for the cure of dropsy, should be given

(1) The *Earl Spencer*, *Lord Walsingham*, *Tillamerry* and *Warren*. These ships, towards the end of their voyage, were almost entirely worked by the passengers; so completely were their crews disabled by scurvy.

(2) This fact was long known to voluptuaries, whose languid appetites required unusual means of excitement, before it was perceived or attended to by physicians.

with as short intervals as the strength of the patients will admit, having observed, that if long intervals were allowed, the water accumulated, in even greater quantity than before. The choice of particular remedies must be left to the judgment of the practitioner, to whom these cases may occur; for we can hardly expect that a disease, the cure of which requires such prompt decision, can be successfully treated by any but a medical man. And therefore we cannot avoid observing, how desirable it would be, that every ship, which with so numerous a crew, is about to undertake so long a voyage, could be provided with a surgeon. But as this may be often impossible, we shall endeavour to give some plain directions, to enable a commander, or officer, on the appearance of such a distemper, to undertake the cure. In the two instances quoted above, where the disease, prevailing epidemically, and being of short duration, most nearly resembled that which is the subject of our inquiry, very active remedies were found necessary for the cure. Mr. DICK, finding that he gained no ground by the use of emetics and lenitive cathartics, had recourse to *clutrium*, of which he gave a quarter of a grain every two hours, till it had the desired effect. This was repeated every third or fourth day. On the intermediate days, squill draughts were given: or the bitter infusion, in which a dram, or a dram and a half of salt of tartar was dissolved. When the swelling was gone, bark and elixir of vitriol, with nourishing diet and wine, completed the cure. Mr. CHRISTIE, Surgeon of the 80th Regiment, found it the most successful plan, to give calomel with squills, in doses proportioned to the urgency of the symptoms, and repeated hourly, till sufficient evacuations were procured. In the most rapid cases, he found one grain of calomel with three grains of squill powder hourly, not more than sufficient. This dose of squill appears unusually great, one grain hourly being as much as could be exhibited, in ordinary cases, without violent effects: but it is well known, that in dropsy the belly is hard to be moved, and this inirritability of the alimentary canal is probably very great in such violent cases.

This experience of those gentlemen shows that active remedies are indispensably necessary; but the two articles employed by them, *clutrium* and squill powder, are perhaps of too violent operation to be trusted in the hands

hands of any but a regular practitioner. The following plan, we conceive, will be sufficiently efficacious, and safer in ordinary hands.

TAKE of calomel, - - - - - twelve grains,
Powder of jalap, - - - - - one dram,
Cream of tartar, - - - - - two drams:

Mix them well together in a glass mortar, and divide into eight doses.

On the first appearance of swelling, let one of these powders be given every hour, till plentiful evacuations have been procured. During the operation, the strength should be supported, by giving nourishment in small quantities: and thirst may be allayed, by drinking sherbet or weak punch made with cream of tartar; which will have the good effect of promoting the discharge of urine. Twenty-five or thirty drops of laudanum may be given that night. The following day, if the sick do not complain of too much fatigue, the same process may be repeated; otherwise a decoction of bark (3) with the elixir of vitriol, or a bitter infusion (4) may be given on that day, and the purging powders repeated on the third. When the water is completely evacuated, the bark decoction with nourishing diet and wine will finish the cure. During the whole period of the disease, the food should contain a good deal of garlic, ginger, and capscum.

The legs and the body should be rubbed, two or three times a day, with a flannel cloth, or with a hand dipped in oil.

We have only to add, that on inspecting the list of medicines on board the *Mornington*, we found the principal articles to be in quantity very in-

(3) Take of Peruvian bark in powder, one ounce,

Water, - - five gills,

Boil for a quarter of an hour in a close vessel, and strain the liquor, through a woollen cloth while hot; when cold, add elixir of vitriol thirty or forty drops: a wine glassful three times a day.

(4) Take of gentian root, sliced, - half an ounce;

Dried peel of seville oranges, one dram,

Coriander seeds, - half a dram,

Proof Spirit - one gill,

Water, - - one pint.

First pour on the spirit, and three hours after add the water, let it stand for a night and strain, or

Take of camomile flowers, half an ounce.

Boiling water, - half a pint,

Let it stand half an hour, then strain it, and add four table spoonfuls of brandy and one dram of salt of tartar: four spoonfuls to be given four times a day.

adequate

adequate to the necessary consumption during the prevalence of any epidemic distemper.

At the same time, we find it difficult to specify, with exactness, how much of every article may be required, but the following quantities of the principal ones we would propose, as necessary and probably sufficient.

Peruvian bark, in coarse powder for decoctions,	30 lbs.
Ditto in fine powder, bottled, corked and sealed,	10 lbs.
Jalap in powder,	4 lbs.
Ipecacuanha ditto,	3 lbs.
Cream of tartar,	40 lbs.
Glauber's salt,	20 lbs.
Salt of tartar,	4 lbs.
Tartar Emetic,	4 oz.
Magnesia,	2 lbs.
Rhubarb powder,	2 lbs.
Calomel,	2 lbs.
Antimonial wine,	2 lbs.
Laudanum,	2 lbs.
Mercurial ointment,	6 lbs.
Turner's cerate,	6 lbs.
Wax and oil ointment,	8 lbs.
Basilicon,	6 lbs.
Nitre in powder,	4 lbs.
Elixir of vitriol,	4 lbs.
Soap balsam or opodeldoc,	4 lbs.
Extract of lead,	4 lbs.
Common plaster or diachylon,	4 lbs.
Blistering plaster,	2 lbs.
Gentian root,	4 lbs.
Dried orange peel,	2 lbs.
Camomile flowers,	2 lbs.
Coriander seeds,	1 lb.
Senna,	2 lbs.
Opium,	4 oz.
Spirit of turpentine,	1 lb.
Pills of aloes with myrrh,	8 oz.

WE have, since writing the above, received your letter of the 16th instant, enclosing a list of the crew of the ship *Exeter*, and in consequence thereof have, by examination of the commander and officers, obtained the the following information respecting her voyage. The ship sailed from the mouth of the *Ganges*, on the 16th March 1800, with fifty-three lascars on board. Neither the present commander nor his officers were in the ship homeward bound. On the day that she sailed, the serang died of the small pox. September the 6th arrived in the *Thames*. December 7th sailed from *Greenland*; having previously given the lascars new suits of warm clothing.

On the 16th sailed from *Portsmouth*; the weather then cold and hazy. The people had remained ashore about five weeks, where they lived on beef and beer; and having probably been guilty of excesses, many came on board in a sickly state. On going to sea, they kept almost constantly below, so that the ship was entirely worked by the Europeans; of whom there were twenty-five on board. This indolence, from which no exertions of the officers were sufficient to rouse them, soon induced disease. The eyes of the sick were very yellow, with some feverish symptoms; their bodies then began to swell, with difficulty of breathing, which gradually increased till death. The duration of the complaint was from five to twenty days. By the 2d of January, the distemper had got to such an alarming height, that at the request of Captain MACINTOSH, the surgeon of His Majesty's ship *Argo*, (the convoy,) came on board to inspect the sick. By his directions they had bark and wine; but he observed, that without seeing them frequently he could not lay down an effectual plan for their cure. On getting into warmer weather, this disorder abated, but it returned with greater violence on entering a colder climate to the southward. No death occurred between January 18th in latitude 20 North, and March 18th in latitude 40 South. The complaint was now exactly the same as described on board the other two ships, and as rapid in its progress. They had not now that yellowness of the eyes, which accompanied the first indisposition. In one case, the fatal difficulty of breathing was not attended with any perceptible swelling. This young man, on the third day of his illness, during which he kept the deck as usual, on drinking about a pint of water, lay down, and in a few minutes expired without any struggle.

By the 15th May, when the ship arrived at *Madras*, the number of deaths amounted to twenty-four. It appears from the log book, that besides the *ferang*, seven men had died on the voyage home, and during the stay of the ship in *England*. So that on the whole voyage, thirty-two had died of the native crew. Some of the remaining people had pains in their limbs, but speedily recovered at *Madras*.

THE diet of the lascars was the same as in the other two ships. The sick had wine, tea and sago. Their berth was between decks, forward; wherein was a port and a scuttle on each side. The deck was fumigated with gunpowder and sulphur, and sprinkled with vinegar three times a week, and sometimes daily. It was well scraped, each time, and cleaned with a wet swab, but never drenched with water.

THE causes of disease, in this instance, appear to have been the same as in the two former; only with this addition, that the irregular life of the lascars on shore had brought on a sickly condition, before they sailed from *England*. It therefore suggests, besides the precautions before laid down, the necessity of abridging their liberty on shore, or contriving some mode of restraint on their conduct when there. Proper measures should also be taken, when at sea, for encouraging, or if necessary, compelling them to be on deck, and in motion, during regular stated periods every day.

We are, SIR,

Your obedient Servants,

(Signed) CUDBERT THORNHILL,

Master Attendant.

WM. HUNTER,

Marine Surgeon.

APPENDIX No. II.

REPORT by Mr. THORNHILL, Master Attendant, and Dr.
HARE, Assistant Surgeon, in charge of the Marine.

C. M. RICKETTS, Esq.

Acting Secretary to the Board of Trade.

SIR,

By instructions from the Board of Trade, contained in your letter to us, of the 24th August 1802, we are desired to inquire into the cause of the very great mortality on board the ship *Aurora*, during her voyage, till she returned to this port; and we have, accordingly, made every inquiry, that in our opinion could lead to a discovery of its real origin.

THE *Aurora* sailed from the river *Hoogly*, on the 9th of April 1801, with a crew of sixty-eight men, of various descriptions, mostly natives; and, notwithstanding a tedious passage, of nearly eight months, during which they encountered extreme bad weather, and excessive fatigue, she arrived in *England* with the loss of one man only, who died of flux, a disease under which he had long laboured, previous to his death.

SHIPS in *England* are generally allowed a larger proportion of animal food, than their people are accustomed to in this country; and it is even reckoned indispensable for the preservation of health in a cold climate. Fermented liquors, also, make a part of their diet; for the disciples of MAHOMET deem it no violation of their Prophet's injunctions, to enjoy the cordial effects of spirits so far from home.

IN the month of January, while the ship lay in the river *Thames*, three men died of inflammatory disorders, from the effects of cold; and one man, absent without leave, they afterwards learnt, had died ashore.

On leaving *England*, the crew were served with rice, dâl, butter, and salt herrings. They had potatoes once a week, till they arrived off the Cape, and tamarinds and curry-stuff, as much as they could use, the whole voyage. Sugar was occasionally allowed, and drams often.

THE

THE space below was about twenty-four feet by thirty-two, besides the fore-castle, ventilated by means of a wind-sail; and though it could not be washed, it was frequently swabbed wet and dry.

ABOUT the middle of March, they received on board forty-five lascars, of the crews of the *Surat Castle*, *Thetis*, and *Eliza Anne*. Disease had been very fatal to the men of the *Surat Castle*, on shore, and one man died of a relapse of fever, soon after being received on board the *Aurora*.

DURING the latter end of this month, and the whole of the month of April, the weather was cloudy and moist: on the 27th of April, a few degrees north of the line, a man died of fever. The symptoms, in this man, at first led the surgeon to suspect some local affection of the head, till he was convinced of the contrary by the similarity of other cases.

FROM the 1st of May, till the 20th, the weather was fine; from that to the end, cloudy. Eight men died in this month; four of the ship's company, and four of the men received as passengers.

IN the month of June, they had bad weather, till the 20th, the rest cloudy with rain. During this month, six men died; four of the crew, and two of the lascar passengers.

THE weather, in the month of July, was very variable; on the 8th a man died of fever; on the 15th one of the lascar passengers died of the scurvy; and on the 17th one of the ship's company died of the same disorder, which now began to be prevalent among the crew. All the sick and passengers were sent ashore at *Madras* on the 18th, and two of the crew died the following day, of scurvy.

The men who died of fever complained much of headach, difficulty of breathing and weakness. Their eyes were yellow, and they were subject to frequent vomiting.

THE sick had spruce beer, sago, and mutton broth, or whatever was recommended by Mr. HARLEY, Assistant Surgeon for *Madras*, who attended them. Emetics and bark, besides other medicines, unknown to Captain GILMORE, were administered by him.

CAPTIAN CLARK, a passenger, Mr. ROB, Chief Officer, and Mr. STEVENSON, third officer of the *Aurora*, agree perfectly in their answers to all our inquiries.

THE evidence of the first tindal, corresponded in every particular:

WITHOUT a more accurate account of the symptoms and progress of the disease, than can be obtained from those entirely unacquainted with medical affairs, it is difficult to ascertain its origin with precision, or to say in what manner it could be avoided.

IN clothing or diet, they had every thing that they wanted, or that is usual for them to have. Though suffering extremely from bad weather and fatigue, during the passage to *England*, not a man was affected with disease, and it does not appear they had any necessary, which was wanting on their return.

Captain GILMORE attributes the origin of the fever to contagion, communicated by the people of the *Surat Castle*. There seems, however, good reason to doubt this being the only cause. The men who died soon after being received on board, had long been in a weak state of health.

THE fever did not appear first among the people from the *Surat Castle*, but among the crew of the *Aurora*.

THE fever did not break out immediately, as might have been expected in contagion; but broke out when they were within a few degrees of the line, where infectious fevers have been observed to decrease in violence, if they are not entirely destroyed by climate.

THE symptoms, as far as we can judge, seem rather to indicate the bilious fevers common to hot climates, than the contagious fever of colder countries.

If this fever does not appear to have arisen from contagion, or not entirely so, we must seek for its cause amongst those which favour the production of disease in general.

THERE can be nothing more useful in preserving health, than proper food, nor any thing more pernicious than the want of it. We cannot here inquire whether mankind are better nourished by what the vegetable kingdom affords them, or by that which is derived from the flesh of animals; nor, whether a mixture of both should be our food all over the world.

It is easy for those who support either opinion to find arguments in favour of all. The wilds of *America* afford game for food, and its inhabitants find health in it; the shores of all countries afford fish, and no place is more healthy. *India* yields rice for the numberless inhabitants, no

people are more healthy. During the passage to *England*, we see them encountering every hardship that winds and waves united could occasion without injury; and have no doubt that custom has made rice more fit for the stomach of a lascar, than the flesh of animals, which is fitter for an English stomach than it. The free use of fermented liquor, must also have much effect upon the irritable frame of a native of *India*. To this we may add idleness, a common source of disease, and I believe to be an extremely frequent one on board ship, where crews are habituated to hard labour for months, and, from a favourable change of weather, or from calms, they become entirely idle.

SUDDEN changes, of all sorts, have been observed to produce powerful effects upon the human body, and to be a frequent cause of disease; from hard labour to idleness, or again from long ease to hard labour.

CLOTHES were given to the crew of the *Aurora* by Captain GILMORE, or at least to such as he could prevail upon to take them; but even the cold winters of *Europe* are not sufficient to make a lascar forego the pleasure he expects in port.

THEIR dress is therefore scanty. They are often wet, and will, on nothing short of punishment, change it on going to bed. To this, they are extremely dirty, and have been known frequently to remain in their own excrements, rather than go upon deck, in cold weather. This stigma rests with all lascars. Wet and filthy, they will turn into their hammocks, to suffer all the bad effects of cold and moisture upon a weak constitution.

NEXT to food, and defence from the inclemency of the weather, we should consider the element common and necessary to all animals. Nothing contributes more to the preservation of the body and mind, in a proper state of health, than a constant supply of a pure air, which could not be done on board the *Aurora*. They had no communication with the external air, except by the hatchway. Lumbered with goods that might have been injured by moisture, they were obliged to clean the deck with a wet swab; which could do little more than add moisture to the dirt already collected there, and promote the putrefaction of matter most pernicious to the animal body.

DURING the *American* war, hogs and sheep from *England*, crowded together

gether on board ship, often contracted the most destructive disorders, from being thus confined to live in their own effluvia. From this cause, the jail-fever, so fatal in places of confinement, and the plague itself, derive their virulence. No rules could be too strictly adhered to, in order to prevent this evil.

THOUGH change of diet might undoubtedly operate powerfully, as a predisposing cause of disease, I consider want of cleanliness and pure air as the most active and immediate cause. Cold and moisture, in addition to want of cleanliness, is the most general, though sometimes unavoidable cause of disease on board ship. The effect of cold is in proportion to the degree of heat we are accustomed to live in.

THE native of *India* cannot therefore bear the inclemency of winter in *Europe*, without being better sheltered from it than its inhabitants; nor can *Europeans* withstand the scorching of the sun, during a hot season, without more protection than the half naked *Indian* requires. In almost every temperature, which does not destroy, or lessen the vital power, in living bodies, all animals have a peculiar property of preserving their heat nearly unchanged; but, by the long continued, or sudden application of a temperature uncommon to the body, this power may be impaired, or injured, in some way yet unknown to us. The constitution is altered, and made susceptible of disease from the slightest cause.

In every country and climate, much moisture is hurtful to health. In the beginning of this passage, the weather was almost constantly cloudy and moist. From the best information I can procure, it is a most difficult task to keep lascars clean, or make them clothe themselves; but it is a labour well worth the trouble to commanders of ships, and not undeserving the attention of Government. Were regulations laid down, they might be followed; while every attempt in an individual to introduce rules, the immediate utility of which is not directly evident to a seaman, would be looked upon as an encroachment on personal rights. Yet, surely the welfare and even existence of so many men are worth our utmost care.

APPENDIX No. III.

BY THE SAME

TO C. M. RICKETTS, Esq.

Secretary to the Board of Trade.

SIR,

ACCORDING to your letter, containing instructions for us, to inquire into the cause of mortality on board the ship *Lucy Maria*, on her passage to *England*, and her return to this port, we have endeavoured to procure every information in our power.

CAPTAIN DAWES assures us, that the crew during the whole voyage, had as much rice, dâl, ghee, tamarind, and chillies, as they could use. In harbour, they had fresh meat and vegetables. Off the *Cape*, they had conjee, with rum, sweetened with molasses, independent of their allowance.

THE sick had sago, wine, spruce beer, and whatever Mr M'GRATH, the Surgeon, on the passage to *England*, recommended.

THE crew occupied the whole of the gun-deck, which was frequently fumigated, to render it more wholesome. The ship has thirteen ports of a side, which were kept open, whenever the weather would permit: also three wind sails, one in each hatchway.

FROM the time they quitted the Pilot 21st March, till they arrived off the *Cape*, the weather was fine. In June, they experienced a great deal of bad weather off the *Cape*, which continued for the first part of the month of July. Besides their daily allowance, the men had drams when they got wet. It was not till they quitted *St. Helena*, that they began to be sickly. The bedding and clothes were kept as clean as possible. The hammocks were brought upon deck daily. In *England*, the crew had beef and mutton, cabbages, carrots, onions, potatoes, and as much small beer as they chose to drink. On the ship's arrival in *England* they were allowed to take what flops they pleased. On her departure, Captain DAWES laid in salted fish, which lasted during the passage to *Calcutta*; and as many potatoes as lasted for three weeks after they passed the *Cape*. The people were always at watch and watch.

MR.

MR. JAMES HORN, first officer, declares the crew had more cargo-stuff and vegetables than in any ship he has ever been in *England*. They had two fires on the gun-deck during the cold weather. The decks were scraped always twice a week, and fumigated three times a week.

Of those who died on the passage home, we can procure no distinct account; as Mr. M'GRATH who took charge of the sick, remained in *England*.

THE first two men, who died after they sailed from the *Dorset*, had pain in the side, which was more obscure in the shoulder. The side swelled, but not considerably. They were easily purged. When first affected, they were bled and blistered, mercury was afterwards used. They were part of the *Sarat Castle's* crew, and had previously been much debilitated by disease.

THE fever appeared first off *Malaira*, and came on with a cold fit. The face shrunk suddenly. The eyes became yellow: violent pain of the loins, and dull pain in the head, with a sense of weight.

EMETICS were given to the sick, and they were purged with calomel soon after. The bark was then tried with advantage, particularly the pale bark. Port wine was used freely, and porter at times. After vomiting and purging, they seemed much relieved for a few hours. In the course of eight or ten days, the fever left them complaining of great weakness and pain in all their joints, which gradually went off.

THOSE in whom the disease terminated fatally, were much worse on the third day, and died on the fourth or fifth. They rejected every thing from their stomach; their tongue was dry, with a black, hard coat upon it. They soon became delirious, and extremities affected with spasms.

ONE man, a topas, had been afebrile, complained of swelling, as if his body would burst. He died in six hours.

ON the passage to *England*, the crew of this ship was supplied with every article of diet, and had every convenience that could possibly be required. They had the whole gun-deck well ventilated, and could not therefore suffer from confined air, but were, from want of clothes suited to the inclemency of the weather, and their weak constitutions, exposed to all the pernicious effects of cold and moisture, which though it did

not appear immediately, gave the predisposition to disease, which appeared in a short time afterwards. Spirits seem likewise to have been too freely used. For notwithstanding it may be often necessary to encourage the flagging spirits of a seaman, in bad weather, too frequent use of cordials will certainly injure the health. The mixture of spirits with congee was judicious as a condiment, but surely unnecessary, when given in addition to their common allowance.

WHILE the *Lucy Maria* was in *England*, every attention was paid to the health and comfort of the crew. Stoves were properly placed, to keep them warm, and they, as usual, were allowed meat, in proportion to the coldness of the climate. By the most accurate experiments on digestion, meat is found to digest in the stomach in much less time than vegetables, and on that account will more readily produce indigestion of habit, that powerfully predisposes to disease. And accordingly, the first complaint is an acute hepatitis, which would not be looked for in a debilitated constitution. This is followed by a dangerous fever, possessing more the character of that incident to strangers in a hot climate, than the fever to which the inhabitants of hot countries are themselves subject. We are therefore of opinion, that the mortality on board this ship was chiefly owing to the severity of weather, to which they were exposed, and a change of living unusual for them.

How far the peculiarity of season affected the nature of diseases, it is impossible to say exactly; yet I have no doubt that it operated powerfully in producing the disease.

APPENDIX No. IV.

BY THE SAME.

TO C. M. RICKETTS, Esq.

Secretary to the Board of Trade.

SIR,

Your letter to us contains instructions from the Board of Trade, for us to inquire into the cause of the great mortality on board the ship *Marine* on her passage to *England*, and her return to *Calcutta*; we have therefore endeavoured to procure every information.

CAPTAIN PURRIER declares the crew had a full allowance of rice, oil, and ghee; also fish, consisting of cod and herrings, as much as they could use. The sick had potatoes, and at the commencement of the passage, on their return, small beer was served to the crew, and occasionally spruce beer. They had spirits, except in very hot weather. Their berths were from the after-part of the fore-hatch-way to the stem. In this space, they had two scuttles of a foot square each, and a wind-sail always down the fore-hatch-way. They all used hammocks, which were brought on deck at all times when the weather permitted: warm clothing was served out in cold weather. Their berth was white-washed often and fumigated.

SICKNESS made its appearance amongst the crew, soon after leaving *England*. It came on generally with pains in the loins, severe headachs, flushing of the face, and suffusion of the eyes and strong pulse. These symptoms, with much delirium, did not abate for four or five days. The tongue became parched, dry and black, the eyes yellow, and hiccup followed, which soon ended the scene.

AT first JAMES's powder was given, in doses of six and ten grains, once or twice a day. When the fever yielded, they had bark. Blisters were applied to the delirious. Captain PURRIER bled some, in whom the symptoms were very high in the beginning; and finding JAMES's powder very ineffectual, tried calomel, in doses of from four to eight grains. Some had it till the mouth was affected. Conjee with wine was given, and flour, to make soojée. When Captain PURRIER had used all his bark, in

place

place of this tonic he made steel, or rather iron wine, with nutmeg put into wine, which was given the convalescents to drink.

MR. CUBISON, chief officer, thinks the origin of the disease was contagion, caught from three men, received from the ship *Hope*, which they found afterwards had been very sickly. One of the three men was soon discharged sick; a second, the carpenter, was taken ill, soon after the first man was discharged.

EXCEPT conjee and liquids, the sick would receive no nourishment.

BUKEERA, the serang, declares the crew were in all respects well used, and had always plenty to eat. The sick had spruce beer and Madeira wine, mixed with conjee, and the rest of the crew had drams in cold or rainy weather. Every one had plenty of warm clothing in cold weather. All had hammocks, and plenty of room in their berths. The Captain took great care of the sick.

ABRAM, tindal, shipped in *England*, says the crew had a proper allowance of rice, dāl and ghee. They had each a herring for three days, and stock-fish. They had warm clothes, yet got sick. The Captain was very attentive to the sick. He gave them medicines, spruce beer and Madeira wine in conjee.

BALLO, cassab, confirms the tindal's account. He says the people had drams in cold and rainy weather, and grog on Sundays, in warm weather.

May 22d		in latitude 45 43 North,		in sick list		4 men,
	23d	- - -	45 26	- - - - -		6
	24th	- - -	43 57	- - - - -		8
	25th	- - -	42 25	- - - - -		5
	26th	- - -	41 32	- - - - -		3
	28th	- - -	41 2	- - - - -		9
	31st	- - -	37 52	- - - - -		9
June	1st	- - -	36 50	- - - - -		11
	3d	- - -	34 47	- - - - -		9
	6th	- - -	32 59	- - - - -		9
In <i>Madeira</i>	17th	- - -	32 30	- - - - -		16
	18th	- - -	31 20	- - - - -		16
	19th	- - -	29 39	- - - - -		15
	21st	- - -	26 13	- - - - -		10

June 23d in latitude 21 25 North, in sick list 17 men.

24th	-	-	-	19	4	-	-	-	-	-	14
25th	-	-	-	15	2	-	-	-	-	-	18
27th	-	-	-	12	48	-	-	-	-	-	19
29th	-	-	-	9	43	-	-	-	-	-	17
30th	-	-	-	8	49	-	-	-	-	-	17
July 3d	-	-	-	7	42	-	-	-	-	-	16
5th	-	-	-	6	20	-	-	-	-	-	15
6th	-	-	-	6	2	-	-	-	-	-	11
8th	-	-	-	5	23	-	-	-	-	-	10
12th	-	-	-	4	28	-	-	-	-	-	10
26th	-	-	-	9	10	South	-	-	-	-	8

From the 26th July, no more remarks on the sick.

By the above list, disease increased fast during the passage to *Madeira*, and seems to have gained virulence while they remained there. But it is somewhat remarkable, that the number of sick decreases rapidly, under the line, when the ship's way is not much above twenty miles a day.

THE most remarkable part of this report, however, as well as some preceding ones, is that disease seems to be contracted in *England*; and I have no doubt that the difference of climate, and mode of living, are sufficient to produce it.

THE progress of the disease rather confirms the idea, entertained by Captain PURRIER and Mr. CUBISON that it was contagious.

CAPTAIN PURRIER seems to have done every thing in his power to stop its progress, and to relieve their suffering. Though he had medicines in his possession, it is hardly to be supposed, that he could administer them with the skill of a medical man. One thing I am afraid he lost many patients by, he allowed the repugnance to food, in the sick, to prevail over the absolute necessity of taking nourishment, and I much suspect many must have died of mere debility.

(Signed) CUDBERT THORNHILL,
Master Attendant.

(Signed) JAMES HARE,
Assistant Surgeon, in charge of the Marine.

FORT WILLIAM, February 16, 1803.

APPENDIX No. V.

BY THE SAME.

TO C. M. RICKETTS, Esq.

Secretary to the Board of Trade.

SIR,

IN compliance with orders from the Board of Trade, contained in your letter to us, we have made every inquiry to discover the true cause of the great mortality on board the ship *Countess of Sutherland*.

ABOUT the middle of April 1801, the *Countess of Sutherland* left this port, with a crew of 105 men, and arrived in *England* in the month of February, without any loss by sickness. During the passage to *England*, they had rice, dâl, ghee; and at the new moon, the Captain made them a present of a sheep, which was divided amongst them. In bad weather, they had drams. It was not till the end of this long and dreadful passage that the crew began to be sickly; and from the continual storms and sufferings they had undergone, it was surprizing they were not sicker so. During this passage, the men were well clothed, they had fleps twice served out to them. The whole of the gun-deck was clean, for the use of the crew. The lascars had the space before the main hatchway, ventilated by four doors fore and aft, twelve inches high and eighteen inches long.

ON the ship's leaving *England*, the crew had rice, butter, and fish. In *England* they had mutton or beef, every day, with vegetables.

MANY captains of ships complain that the mendicant disposition of the lascars, who are void of all principle of independence, is too much encouraged by the people of *England*; and Captain ECCLESTONE says, that more than half his ship's company deserted him, at times, upon these profitable excursions.

THE following is what we received from Mr. ALEXANDER MACRAE, the medical man on board the *Countess of Sutherland*, on her return to *Bengal*. Though it is not an account minutely detailed, yet it contains enough to shew the cause of sickness on board the ship.

WHEN the *Countess of Sutherland* arrived in the *Port*, from this tedious passage, the crew were becoming sickly. The most prevalent diseases

were

were pleurisy and fevers. The former yielded readily to bleeding, blistering, and general antiphlogistic regimen. The latter to the free use of the bark.

While the ship remained in *England*, the lascars suffered greatly from the severity of the weather. Their recovery was in many cases tedious, and their usual strength and activity was not restored until they reached a warmer latitude.

THE ship sailed from the *Dorons*, on her passage back to *Calcutta*, on the 7th of August 1802, with a healthy crew: on the 10th two men were taken ill of fever. The symptoms were headach and giddiness, with a dull pain of the back and foul tongue. The pulse hard and quick, with general lassitude. The countenance somewhat dejected. Having premised emetics and cathartics, says Mr. MACRAE, the bark was given with success. They had soup from the Captain's table, and conjee to drink. From this time, till the beginning of November, the crew continued very healthy. Then the scurvy appeared amongst the lascars, and increased rapidly; first in those who had been ill in *England*. All salt articles of diet were stopped, and every precaution taken to cure the disease, or at least retard its progress. On being asked concerning its origin, Mr. MACRAE says, he knows no cause to which it can be attributed but the change of diet. "While in *England* they were accustomed to the free use of butcher's meat and vegetables, of which they were deprived at sea, and a far inferior diet substituted in its room. This I consider to have been the chief cause of scurvy; for we had no bad weather during the passage, and very little rain, except when crossing the equator. The ship is large and open. Another circumstance I am induced to consider a predisposing cause of scurvy is the inattention to cleanliness, and indolence of the lascars." This opinion of Mr. MACRAE, upon the origin of the disease, seems well founded.

THE history of the *Aurora*, with the exception of the sort of disease to which the crew became subject, may serve for the history of the *Countess of Sutherland*. In both ships, as in others, the crew were healthy in the worst weather, in all climates, on their passage to *England*. Extreme fatigue and hard labour had at last reduced them so much that they were attacked with fever; for

"Man must decay, when man contends with storms."

By

By the attention and skill of Dr. DUNCAN, the sick were recovered; by allowing them a warmer berth, and regulating their diet in *England*.

In addition to indolence, and want of personal cleanliness, idleness I believe to have had much power in hastening the coming on of scurvy.

(Signed)

CUDBERT THORNHILL,

Master Attendant.

(Signed)

JAMES HARE,

Assistant Surgeon, in

charge of the Marines.

FORT WILLIAM, *March* 31, 1803.

APPENDIX No. VI.

Account of a sickness which prevailed on board the ship Porcher, on a voyage from England to India.—By S. Ross, Esq.

IN a voyage from *England* to *India* there is little scope for medical observations, unless when some infectious disease appears, which is a rare occurrence, the scurvy being the principal complaint a surgeon meets on board of a ship, that proves troublesome. In the month of January 1801, I was solicited to take the medical charge of the crew belonging to the ship *Porcher*, which consisted of one hundred and twenty lascars, and a few *Europeans*, then in the *Downs*, on the point of sailing for *India*. I joined the ship, about the middle of the same month, and found thirty in the sick list, with fevers and pulmonary complaints. The weather was cold, with rain frequently in the day and night, consequently the decks were constantly damp. The weather continuing in this state, during our stay at *Portsmouth*, which was seven weeks, several of the ship's company died of fever, and indeed all of them suffered more or less from the same disease. The want of proper clothing, the people being unemployed, the dampness of the weather, and inattention to cleanliness, were, in this instance, the predisposing causes to the fever that prevailed. On the 1st of April, we sailed for *Madeira*, and remained there to the 20th of May: all this time the people were pretty healthy, and continued so until we approached the higher latitudes off the *Cape of Good Hope*, when the scurvy began to make its appearance. The weather was cold, with rain at times, the clothing of the people was not calculated to defend them against the inclemency of this changeable climate, the provisions were rice, dāl, ghee, with a small portion of salt herrings: the liquor, which was hitherto served out in drams, twice a day, was now all expended. Sixteen of the lascars were attacked with the scurvy, five of whom died before we made the *Cape*: the symptoms appeared as follows: feet and legs became swelled and pitted on pressure, with petechiæ all over them; general lassitude, accompanied with great disinclination to motion; gums looked livid and were tender

to the touch at first; the progress of the disease being rapid, the abdomen soon was affected, with difficult respiration; the aversion to motion increased, as the swelling of the body advanced; and towards the latter stage of the disease, the gums became spongy and foul, urine scanty and high coloured, face, arms and hands became considerably swollen, and gave a degree of resistance to the touch; death shortly closed the scene.

On opening two subjects, who were attacked in the manner described, and died of the disease, there was a considerable collection of fluid in the cellular membrane, but no unnatural appearance in the thoracic or abdominal viscera. With respect to the mode of treatment, the remedy administered first was a purgative, composed of calomel and jalap, and after its operation, an opiate; one pint of beer in a fermented state, a few plums, sugar and tea, was daily given to those who were ill, which had the salutary effect of arresting the progress of the disease, until fresh vegetables were procured: some of them, refusing to take the beer &c. fell victims to their obstinacy. On the first of August, we reached *False Bay*, where we were abundantly supplied with oranges, which were the only vegetables procurable at the season, in any quantity. At this time, ten of our people were confined to their hammocks, unable to move without assistance; breathing laborious, great languor, body and extremities considerably swollen: by the use of the fresh oranges, in three days after our arrival, those men were able to sit up, a short time in the day. On the 7th, which was the day we sailed, they were so far recovered, as to walk about the deck a little, and in two weeks after our sailing, they were perfectly recovered, and able to return to their duty. No symptom of the disease reappeared in the voyage.

In the ship *Porcher*, the principal causes that tended to produce the scurvy, were the want of warm clothing and cleanliness, with the decks being allowed to remain wet: it is much to be regretted, nothing was sent on board to prevent the complaint taking place, and had we not been fortunate in making the *Cape*, the majority of the ship's company must inevitably have died. Lime juice seems to be the best antiscorbutic that can possibly be sent on board of a ship. I am the more convinced of it, from observing its effects, in a former voyage, among *European* sailors. Shortly
after

after we got possession of the Island of *Ceylon*, five Indiamen were ordered there, to convey cinnamon, &c. to *England*. The ships were detained three months; during which time they lived chiefly on salt provisions, fresh not being procurable on the Island, except in very small quantities. Soon after leaving *Trincomalie*, fourteen of our best seamen complained of symptoms of scurvy, which advanced rapidly. There being plenty of lime juice on board, in a good state of preservation; having previously evacuated the bowels, one pint of the juice was daily given, to each man; soup at noon, a plentiful quantity of tea, and sugar, also the usual allowance of grog, made into punch: by this mode of treatment, the disease soon became stationary, and before we reached the *Cape*, they were all recovered and on duty.

TAMARINDS I consider would be a good thing at sea among the lascars. Tea and sugar might be very useful. The most important article is fresh water in abundance. Oil for the purpose of rubbing the body would be pleasing to them.

THE common country bitter might be a good substitute for the bark.

EMPLAST. ADHESIV: answers well in all cases of wounds. Castor oil is a medicine the lascars readily take when ill. Dates would be useful in preventing the disease: pickles are here procured at a moderate expence.

APPENDIX No. VII.

HAVING been informed that the *Scaleby Castle*, on a late voyage from *England* to *Bombay*, had suffered severely from scurvy, I suspected that I might be able to trace in it some appearances of *Anasarca Cachectica*, and with that view proposed to Mr. McWHIRTER, who attended the sick on board of that ship, a set of queries, which with his answers are here annexed.

1. How many people had you on the *Scaleby Castle*?

To the best of my remembrance, from 120 to 130 lascars, and from 25 to 30 European seamen.

2. Were they in good health at the time you sailed from *England*, or what complaint then prevailed among them?

The lascars were in a very debilitated state, from the intense cold weather; in consequence of which, several of them lost their toes: a fever of the typhus kind raged for a short time, but we lost no lives from it.

3. When did you sail from *England*?

The pilot left us off *Plymouth*, on the 6th of April.

4. What weather had you on the passage out?

In general pleasant, dry weather, except a few days, in the Bay of *Egypt*, near the line, and off the *Cape*.

5. Do you know what was the diet, and the manner of life of the lascars while in *England*?

I am not positively acquainted with their diet, or mode of living, but was informed that they had an allowance of animal food along with their rice, and three drams daily: were very dissipated on shore.

6. What was it on board?

Rice and ghee, with two drams daily.

7. How were the people clothed?

With warm plaiding and good stout shoes.

8. How with respect to personal cleanliness?

They were very filthy, in this respect, and never would undress themselves, when turning in: but wore their clothes from the time they first put them on, until they were worn out.

9. How was their berth, as to cleanliness, dryness and ventilation?

10. When did sickness appear among the people?

11. What were the symptoms and their progress?

12. What was your opinion of its nature and cause?

13. What connexion could you trace between the change of climate, or state of the weather, and the increase or diminution of the sick list?

14. What was the duration of the disease in fatal cases?

15. What remedies were used, and with what effect?

In all these respects, tolerably comfortable.

We had sickness, from the time we sailed; but the prevalent disease was scurvy; which made its appearance about four weeks after we went to sea.

They were generally affected with the usual symptoms: in a few cases, the lower extremities swelled to an enormous size, attended with considerable pain in the joints; but in all, the gums were spongy, attended with affections of the chest, violent dyspnoea, and some with hemorrhages, &c.

The nature of the disease appeared to me evidently to be scurvy, from its invariable mode of attack; with lethargy, despondency, spongy gums, &c. &c. The cause, I believe to have been chiefly cold and damp, together with their weak diet, filthiness, and their own lazy dispositions, rather than salt provisions; although we discovered, that they got some salt fish, nearly in a state of putrefaction, from their serang, which was unknown to any of the officers till near the end of our voyage.

They were generally, more healthy, in dry, warm weather, than in damp, cold ditto.

The duration was by no means regular: some were carried off very suddenly, after a week or two's illness; and others survived for four, five, and nearly six weeks.

We unfortunately, came to sea, without any lime juice. I having heard of

the

16. Did you dissect any of the dead, and what were the appearances?

17. What was the total number of deaths?

18. Did the people who were sick on their arrival in *India*, soon recover, after getting on shore.

19. Did you touch at the *Cape*, or any intermediate port, and what effect had you stay there on the sick?

20. Do you know any thing of the weather and state of the crew's health, on the preceding passage from *India* to *England*?

21. When did you arrive at *Bombay*?

the good effect: of *nitre* dissolved in vinegar, gave that as a substitute, but had the mortification to find it had no visible good effects. I also tried the mineral acids, without success; gave camphor in cases of oppression in the chest, which proved a temporary relief: their diet consisted of *rice* with sugar and vinegar.

I did not, as I thought the disease was sufficiently evident from the above symptoms.

We lost twenty-seven: twenty-five of scurvy, one of consumption, and one of dropsy.

I had not an opportunity of being generally informed of this, but in a few instances I met with the people, in seemingly tolerable health, who were scarcely able to go ashore when we arrived: and my stay was only for ten days.

We did not touch any where, from the time of sailing, until we landed at *Bombay*.

I am not well informed upon this subject, but understood they lost several lives, but from what diseases I cannot say. They touched at *St. Helena*.

Upon the 9th of August.

(Signed) JOHN McWHIRTER:

APPENDIX No. VIII.

HAVING accidentally mentioned the dropfical complaint of the lascars, in company with Captain C. BROWN, of Artillery, he informed me that a disease, which he conceived to be similar, had prevailed among the crew of a ship in which he had gone up the *Red Sea*, on the expedition to *Egypt*, but that the troops and gun lascars, under his command, were entirely exempted from it. This exemption he ascribed to their being better nourished than the ship's company.

THIS conversation induced me to write to Mr. CHARLES WAKE, who had the medical charge of the troops on board that ship, requesting more particular information. The following extract from his reply, though it shews that Captain BROWN was mistaken in the disease, so fully illustrates the comparative effects of nourishing diet, or the want of it, that it is well worthy of the reader's perusal.

" WITH respect to your inquiry, I am sorry to say that what information I can give you of the diseases that occurred amongst the ship's company on our passage up the *Red Sea*, will not in the least lead to a discovery of that fatal distemper you mention to have been on board some of the country ships lately returned from *England*.

" FROM the accounts you have heard of its being a dropsy, it is not in the smallest degree similar to the disease the lascars, &c. were attacked with. The few we lost died of scurvy, and fevers, brought on in consequence of being much exposed to bad weather, living upon salt provisions and being very badly clothed: those who died of the scurvy were principally Portuguese, and owing to the great number of horses and troops on board the transport, they were obliged to live in a very confined part of the ship.

" I AM happy to say that we were more fortunate with the troops; for which we are indebted to Government, in sending a supply of every thing that could possibly be wanted, for the natives and *Europeans*: and from the great attention that Captain BROWN paid to his people, in seeing that they had every thing to make them comfortable, we only lost one native attached to the horse Artillery, during the whole of our voyage to *Coffier*.

" I ALSO

“ I ALSO attribute our detachment being so very healthy to their having a better berth in the ship. The *Europeans* occupied the whole of the great cabin, and the gun lascars the steerage, added to which they received fresh provisions twice a week, and many other little necessities of life, which the ship's company did not get till their arrival at *Mocha*; at which place Captain WRIGHT, who commanded the ship, procured a stock of every necessary that they were in want of: amongst other things, a quantity of fresh and pickled limes were brought and given them every day, which was the means, in a short time, of restoring many of them to their former good health.

“ SOME of the men who died had a bloated appearance, which probably might make Captain BROWN imagine they had a dropfy (1).

“ FROM what you mention in your letter, of the lascar's nourishment being defective in quantity, and in stimulating or nutritious quality, I am of opinion, from that single circumstance, that their disorder was brought on from that cause.”

CAPTAIN WRIGHT, who commanded the Transport, being in *Calcutta*, I proposed to him some queries, which are here subjoined, with his answers.

- | | |
|---|--|
| 1. When did the <i>Superb</i> sail from the river <i>Hoogly</i> ? | On the 18th March 1801. |
| 2. When arrived at <i>Mocha</i> ? | May 28th, at 11 A. M. |
| 3. When at <i>Coffier</i> ? | July 11th, having been forty-three days from <i>Mocha</i> . |
| 4. When did the scurvy break out among the people? | A short time previous to our arrival at <i>Mocha</i> , there were four or five of the ship's company sick, but not dangerously. We sailed from <i>Mocha</i> on the 31st May at ten A. M. and the first that died was a lascar, on the 14th of June; and previous to our arrival at <i>Coffier</i> , we |

(1) Besides this bloated appearance, Captain WRIGHT informs me, that the scorbutic patients on board of his own, and of another ship, had a symptom, which has been known, ever since the time of ARÆTÆUS, (MOFFAT'S translation, p. 197) to be an attendant of dropfy, that the penis of each was twisted like a corkscrew.

5. Were the gun lascars entirely exempted from it?

6. A list of deaths with their dates.

7. What was the diet of the lascars, before arriving at *Mocha*?

8. What between *Mocha* and *Casser*?

9. What had the gun lascars?

10. What was the situation of the berth of the ship's company?

11. And that of the gun lascars and troops?

12. What were the symptoms of the disease that afflicted the lascars?

had buried ten of the ship's Company.

To the best of my remembrance they were.

Given at the end of the queries.

Rice, dâl, and ghee, (found by the ship) with salt fish of their own.

The sick had fresh and salted limes, with mutton or fowls, and those that were well had salted limes as a preventive, and the ship's allowance as above-mentioned.

Rice, dâl, ghee, fugar, chourah, chillies, garlic, tamarinds, tobacco to chew and smoke, sweetmeats and flour; also oil, to oil their body.

Before the fore-hatchway, the half of which it took in, on each side measured fore and aft, thirteen feet three inches, athwart twenty feet. Had two ports on each side, but which frequently, on account of the weather, were obliged to be shut, and consequently a very contracted berth and badly ventilated.

Gun lascars, the steerage, a well ventilated berth. The European troops, the great cabin, the proper bulkhead of which was taken down, and its place supplied by a grating, in order to preserve a free circulation of air.

A swelling in the legs, and the gums affected as is common in scorbutic cases. —They also complained of a hard lump in the stomach, which they observed gradually rose higher, as their disorder increased. And I believe in most cases, when this hardness got so high as the breast, the patient very soon after expired.

13. What was the number of the ship's company on sailing from *Bengal*?

Including eight servants, sixty-eight.

14. What the number of troops and gun lascars?

Including servants, I believe one hundred and fifty-five.

A list of Deaths with their Dates.

Dus Mahomed,	lascar,	June 14th 1801,
Buchoo,	ditto,	June 23d,
Andrew,	ditto,	24th,
Bofoo, (Malay,)	ditto,	25th,
Loll Mahomet,	ship's seapoy,	29th,
Golaum Labbee,	lascar,	July 4th,
Panchew,	ditto,	6th,
Noor Mahomed,	ditto,	6th,
Burrah Deenah,	ditto,	9th,
Thomas, 2d.	seacunnie,	11th, this day anchored at <i>Coffier</i> ,
Mungalo,	lascar,	12th,
Thomas, 1st.	seacunnie,	14th,
Chootah Boxoo,	lascar,	14th,

REMARK—On the 21st of July, there were only eight men incapable of doing their duty: since our arrival at *Coffier*, the wheat and mutton served to those in health has no doubt preserved them from the scurvy.

THE sick had constantly fresh provision, tea and biscuit, with limes preserved in salt.

Sailed from *Coffier*, on the 30th July, for Jedda.

Died Gooee,	lascar,	August 4th,
Fuckeer Mahomed,	ditto,	4th,
Burrah Boxoo,	ditto,	October 19th,
Ruffulee,	ditto,	November 19th,
Deenah,	ditto,	22d,
Francisco Rozaro,	ship's drummer,	28th,
Azum Cawn,	lascar,	December 10th,
Loll Mahomed,	ditto,	10th,
Jaun Mahomed,	ditto,	12th,
Koitanah,	seacunnie,	13th,
Addramaun,		14th,

I HAVE remarked, that on the 21st July, we had only eight convalescents.

IT was at this time that the detachment I brought from *Bengal*, marched from *Coffier* to *Ghuna*, in consequence of which my poor people were deprived of the faithful attendance of Mr. CHARLES WARE, the surgeon of the detachment. And it gives me particular pleasure, here to acknowledge the obligations I am under to the above young gentleman, for his very humane and kind attention to our sick, during the passage, and ever since our arrival here.

(Signed) JOHN WRIGHT.

APPENDIX No. X.

Extract from SAUVAGE's Nosologia Methodica, Edit. Daniel.

Volume V, page 64.

" *Anasarca Americana; Mal d'estomac; Labat, voyage en Amerique, Chevalier des Maladies d' Amerique. C.*"

" Nomen vulgare ineptum est; morbus enim est vera anasarca, juxta descriptionem *Patris Labat*, I. Pallent etenim aegri, tumescunt, cum aliquali flavedine, pedes, tibiae, totum corpus, et potissimum facies, si fides sit *D. Chevalier*, œdematose turgescunt: 2° Summa lassitudine prostrati sunt: 3° cum cephalalgia gravativa: 4° inde somnolentia continua: 5° epigastrium et abdomen intumescunt, et tandem ascitici fiunt."

" TRIBUITUR hic morbus esui cancerorum, qui vulgo *Crabes* dicuntur, utpote cibo dyspepto, gravi, nisi corrigatur cruditas vino, et aqua vitae sacchari, vulgo *Tafia*; saepius ortum ducit a decubitu sub dio, moerore. Nigritae Brasilienses, qui durissime tractantur, huic sunt obnoxii, et, ut fanentur, ab hero dimittuntur rus, ubi libertate fruuntur, moerorem discutiunt, et, fructu acajou subacidi usu, intra paucos dies convalescunt. Apud Europaeos, qui in America degunt, hic morbus maxime familiaris est; illi vero utuntur, in curationis initio, potibus cardiacis et sudorificis, balneis calidis, cibo facilis digestionis, vino generoso, dein vero auxiliis, hilaritatem conciliantibus, et potissimum exercitio ita vehementi ut sudor copiosus proritetur."

Account of the Cachexia Africana: a disease incidental to Negro slaves lately imported in'o the West Indies. By Dr. GEORGE DAVIDSON, of Martinico; from the Medical Repository, Vol. II, page 265.

" THERE is a disease to which the negroes, and particularly those lately imported, are much subject; it is named by us *Mal d'Estomac*, or *Cachexia Africana*; and, from a constant symptom, which attends it, *dirt eating* by some (*Dr. HUNTER on diseases of Jamaica*). Negroes also, who have been

some time in the country, are subject to it, but not so frequently as amongst the former. It occurs in those, who have generally speaking been badly clothed, ill fed and lodged, and whose constitutions have been worn out by hard labour. The mind, partaking of the sufferings of the body, is affected with nostalgia, brooding over their ill treatment, separated for ever from their friends and relations, and doomed to suffer without daring to complain."

"As this disease is strongly illustrative (in my opinion) of the new chemical application, you will forgive my trespassing a few moments upon your time, by giving you a short history, and some few remarks."

"THE first symptom, and which indeed, is both the cause and effect, is a fondness for solitude, sadness, grief and despondency, a loss of appetite, or a desire only for what is pungent and stimulant, difficulty of breathing, especially in walking up a hill; a painful gastrodynia, palpitation of the heart, general debility, drowsiness, paleness of the face and palms of the hands, the tongue white, sometimes with an appearance like stains of ink upon it, the lips colouress, the tunica adnata of a glassy whiteness, as also the teeth, the skin of an olive complexion, and cold to the touch, rough upon the surface, the papillæ elevated. Anasarcaous swellings of the eye-lids, face and extremities: water is afterwards collected in the belly and chest, and the unhappy sufferer can only breathe in an erect posture, for fear of instant suffocation. The pulse is always small, feeble, and generally increased in frequency towards night. There is, throughout the disease, an unwillingness to attempt motion, and inability to perform it."

"THE same morbid changes take place throughout the alimentary canal. In consequence of the vitiated state of the gastric juice and impeded digestion, a morbid acidity prevails, and a symptom arises from this cause, which, with some, has given name to the disease; a habit of eating chalk, dirt, or whatever will obtund acrimony (1)."

(1) It appears that the practice is derived from their native country, where, however, it has not the same pernicious effects. "In *Sierra Leona*, as well as in other places of *Africa*, a saponaceous white earth, so unctuous, that it dissolves like butter, is found, with which the negroes white-wash their houses, and which they eat with their rice. This practice is not attended with injury in *Africa*, but, in the *West Indies*, where a yellow ochreous earth is used as a substitute, frequently occasions their death." *Sketch of Discoveries in Africa*, *Edin.* 1799, page 204. *HUMBOLDT* has discovered a similar practice among the natives of *Guiana*.

“ This vitiated action is propagated throughout the whole alimentary canal; the lacteals, abraded by the acrimony of new fluids, no longer possess the property of absorbing healthy chyle; hence the lymphatic glands of the mesentery become inflamed and indurated. The blood, poor, vapid and colourless, no longer stimulates the heart and arteries to action; hence asphyxia and sudden death, and those polypose concretions found in the heart after death.”

“ It is to the want of irritability of the blood, that we are to ascribe obstruction of the menstrual flux in women, in this disease.”

“ From this short account of the disease, which has no other merit than truth, you will be prepared for the appearances upon dissection.”

“ THE stomach is found much enlarged, and thickened, in its coats; the liver sometimes enlarged and scirrhous, but always whiter than usual, the gall-bladder, sometimes with biliary concretions; the bile never of a healthy appearance, generally thin and watery, and slightly yellow or green; the mesenteric glands indurated and scirrhous. Those appearances induced a medical practitioner in a neighbouring island to employ mercury, with a view of removing, as he supposed, obstructions, but a very small quantity of it excited such terrible effects as to oblige him to desist. Accumulated irritability, from the abstraction of the usual stimuli, had rendered them more susceptible to the slightest stimulus.”

“ From this view of the disease, the pathology and treatment of it, I conceive, will be easily understood. Resembling scurvy in some respects, it differs from it only in the symptoms of putrid diathesis not being so obvious; putrid animal food not having been here employed, as an article of diet. The same defect of oxygen prevails in both diseases: and it is probable we would find the same benefit from the employment of acescent vegetables; but we have not here the same putrid diathesis to obviate, and the stomach has been already so much debilitated by poor vapid vegetable diet, that it requires a more stimulant plan; animal food, wine, warm clothing, a gentle treatment. The preparations of iron are here found of the most essential service. Much benefit has also been derived from fermented weak liquors; acescent cane liquor has cured many.”

“ PERHAPS there may be also a deficiency of carbon.”

“ I AM

“ I AM inclined to think that the lungs have a greater share in separating oxygen than the stomach and alimentary canal ; but from the mutual sympathy which subsists betwixt the stomach and lungs, a vigorous action of the former is required to enable the lungs to perform their appropriated action. I conceive, that to produce scurvy, the abstraction of the usual stimuli, as in the disease, the history of which I have just now given, will be sufficient.”

“ IT is remarkable that negroes, subject to this disease, have been much benefited by living in a low situation, near to marshes, which quickly prove fatal to whites ; and I have long ago observed this, before I had formed any theory upon the subject. Perhaps the hydro-carbonic air may act as a cordial. It is, perhaps, the nervous aether itself. It has been remarked by medical writers, that the attack of remittent marsh fevers is frequently preceded by an unusual flow of spirits. The system seems to suffer from too high a degree of excitement.”

THE symptoms described by Dr. DAVIDSON agree, in so many points, with those which affected the lascars, that little doubt can remain concerning the identity of the disease, as far as its essence is concerned, in both cases. Acidity and the practice of dirt eating, however, which make so prominent a feature in the distemper of the negroes, are not mentioned in that of the lascars. Perhaps former habits may have developed this propensity in the negroes, while, in the case of the lascars, from the difficulty of gratifying the appetite on board ship, it might have passed unobserved. It is known to be of frequent occurrence in other cases where there is a deficiency of oxygen ; as in chlorosis. A practice analogous to this prevails among women of the lower class in *Hindooistan*, during the state of pregnancy. They are fond of eating little cakes, made of a kind of clay, which they allege possesses, in some degree, the fragrant of a substance called *Soondha*, which they are accustomed to put in their hair. These little cakes, named *Put-Khula*, are baked in a kiln, and exposed for sale in the markets. I conceive this appetite to proceed from acidity, to which pregnant women, and especially those who live on a poor diet, are subject.

THE lungs of a pregnant woman, being obliged to oxygenate the blood of the fetus, as well as that of the mother, while their capacity is diminished by the increased bulk of the uterus, pushing the diaphragm up into
the

the thorax, it is natural to expect that her system should be deficient in oxygen. And the actual existence of such a state is rendered probable from other evidence.

It might appear, at first sight, inconsistent, that a want of oxygen, that is to say, of the principle of acidity, should be a cause of generating acid. But a diminished vigour of all the functions, particularly of digestion, is the consequence of that defect. Hence substances which are liable to the acid fermentation, are allowed to follow their natural bent: And hence the mineral acids, by restoring the energy of the stomach, are often found to be the best remedies against morbid acidity.

DR. HUNTER (diseases of the Army in *Jamaica*, p. 248,) describes the disease imperfectly, probably from the reports of others, rather than actual observation. He seems to have mistaken its origin, considering as the cause, this practice of eating dirt, which we have seen to be only one of its symptoms.

BUT I have the greatest satisfaction in presenting to the reader the following extract of a letter from Mr. CHRISTIE, which together with the papers annexed to it, exhibits a much more complete history of the disease which I have called *Anasarca Cacotrophica* than I could possibly have obtained from any other quarter.

Extract of a letter from THOMAS CHRISTIE, Esq. Inspector General of Hospitals on Ceylon; dated Columbo 20th September 1803.

I HAVE received your letter of the 4th of August, relating to a disorder which has prevailed amongst the lascars of some country ships, and which from your description, I have no hesitation in pronouncing to be the same disease, which is so well known on *Ceylon*, under the name of *Beriberi*, and which, even of late, occasioned a very considerable mortality amongst both the *European*, and native Troops, employed in the *Candian* war.

I REGRET that my professional duties, which are at present more than usually great, will not permit me leisure to attempt a full history of this disease, which my own experience and the documents which from my official situation here, I am in possession of, might enable me to do, and

which at some future period, I trust I shall have time and inclination to accomplish.

IN the mean time, I enclose you the copy of a correspondence, which took place between the Surgeon of the 6th Regiment of Madras Native Infantry and myself, at a time when that disease was uncommonly prevalent and fatal in that corps; from which you will be able to collect the result of my experience amongst the *Europeans* at *Trincomalie*, as well as the appearances of the disease amongst the natives, with the judicious observations of Mr. COLHOUN on this subject, and his ingenious ideas as to the proximate cause. My correspondence with that gentleman ceased in February 1801, on my embarking for *Egypt*, but on my return to this Island, in the December following, I learned, that notwithstanding the most unremitting attention on the part of Mr. COLHOUN to the medical treatment, and great care and indulgence on the part of Government, with respect to a liberal allowance of animal food, arrack, and other comforts, the removal of the Hospital to a healthy situation on the sea beach &c. &c. *Beriberi* continued to occasion considerable ravages in this corps, until it was removed to the *Coromandel* coast, in May or June 1801.

MR. COLHOUN, from the great number of his patients, and the difficulty of carefully exhibiting medicines to so many, and the impossibility of correctly regulating the doses, was induced latterly to trust almost entirely to sea air, nourishing diet, constant exercise, and stimulating frictions, by means of which he was tolerably successful. He also made use of a great deal of nitrous acid, with a view of counteracting the supposed disoxygenated state of the system, but without much good effect.

I HAVE myself occasionally treated a few native soldiers, and slaves, with the same medicines as the *Europeans*; and where their regularity in observing your directions can be depended on, I think they have an equally good effect; although strong stimulants must be used with greater caution with natives, and indeed smaller doses are required.

IN my late experience in this disease, at *Candy*, I have more frequently met with complete paralysis than I was accustomed to observe with the men of the 80th at *Trincomalie*, which I attribute to the greater severity of the disease at *Candy*, and the impracticability, from the want of supplies, of supporting the strength of the patients, with a nourishing
and

and stimulating diet, during the progress of the disease. The diet of the *Europeans* at *Candy* consisted almost entirely of rice, with a proportion of indifferent beef, made into soup without any fresh vegetables, and but little spice or condiment; and during the greater part of the time they were there, they had only one dram of arrack daily, or half the quantity which they were accustomed to have served out to them, when in quarters.

The chief cause of *Beriberi* is certainly a want of stimulating and nourishing diet; to which may be added moisture, impure air, despondency, dirtiness, and such other causes as tend to debilitate.

It is a remarkable fact, that whilst *Beriberi* has been prevalent with every *European* corps quartered for any length of time at *Trincomalie*, and has also been extremely prevalent in most of the sepoy corps stationed at *Columbo*, it has never been known that an *English* soldier has contracted the disease at the latter place; which can only be accounted for, from the different mode of living at these two stations. At *Trincomalie* the *European* soldier lives much worse, I believe, than at any other *English* settlement in *India*: from the difficulty of procuring cattle, the men have only very indifferent beef served out to them, two, three or four times a week; and on the other days, live on salt provision or fish. The bazar also at *Trincomalie*, from the want of cultivation and inhabitants in the surrounding country, is very scantily supplied; and the men are, in consequence, forced to subsist almost entirely on the rations issued to them by Government. At *Columbo* on the contrary, fresh beef, of a better quality than at *Trincomalie*, is issued daily, and the bazar affords a number of comforts at a more moderate price.

This disease is not very frequent with the natives of *Columbo*, and its prevalence amongst the coast sepoys, as you will observe, is attributed, in a great degree, both by Mr. COLHOEN, and myself, to their parsimonious mode of life. In consequence of a late representation of mine, on this subject, the *Ceylon* Government have granted to each of the Coast sepoys in their service, an allowance equal to one sicca rupee per month, for the purchase of ghee, and curry stuff; but this is not given as an addition to their pay, to be disposed of as they think fit, but must actually be laid out in the purchase of these articles, and is placed in the hands of their Officers, for that purpose.

If any other proof was necessary that want of stimulating and nourishing diet is the principal cause of *Beriberi*, I need only mention that I have never seen a single officer affected, in a distinct manner, with this disease (2); although as great a proportion of them as the men, suffered from the disease consequent on exposure to a vitiated atmosphere, and pestilential miasmata, since nearly three-fourths of all the officers employed in *Candy* were, from these causes, affected with severe bilious remittent fevers.

One of the symptoms of *Beriberi*, which I lay considerable stress upon, as accounting for the rapid progress of the disease, and sudden death, is spasms of the muscles of the chest, heart, or large vessels; for although in none of my dissections have I observed a total absence of effusion in the pericardium, pleura, or cellular substance of the lungs, yet the quantity found is, in general, inadequate to the extreme violence of the dyspnoea; the spasms are, in many cases, evident externally, and in other cases, the irregular action of the heart is plainly indicated, by irregular and intermitting pulse.

As the dyspnoea is the most constant and important symptom, the disease might, I think, with great propriety, be termed *Asthma Hydropica*, and might be defined; difficulty of breathing, preceded by, and attended with numbness and frequently paralysis of the lower extremities; accompanied, generally with œdema, and other dropical symptoms, extremely rapid in their progress, and frequently conjoined with great anxiety, palpitation, vomiting and spasms.

I HAVE, as you requested, also enclosed some detailed cases, extracted from the journals of the different practitioners here, with an account of the appearances on dissection; and now, agreeably to your desire, ought to make what observations occur to me, on the subject of your instructions to the commanders of ships, with respect to the treatment of the lascars.

YOUR directions, with respect to diet, clothing, ventilation, exercise and amusement are excellent. With respect to the latter, it would be well if they were provided with *Tom Toms*, or some of the country musical

(2). I am informed by Lieutenant ROBERTSON, who remained at *Candy*, after the retreat of the Army, that supplies becoming more and more scarce, the officers could not live better than the men, and were then equally subject to *Beriberi*. W. H.

instruments. Cheerfulness, as you observe, is one of the greatest preservatives of health; and despondency is certainly a frequent cause of this disease. This was exemplified in a remarkable degree, in the case of the sick of the 51st Regiment; who for want of dooly bearers, were left at *Candy*, when their corps marched from thence, in April last. All the *Beriberi* cases immediately got worse, and many of the convalescents and others, who had not before had it, became affected with it. The greater success with the *Eurpeans*, is, I am convinced, in a considerable degree, owing to their enjoying better spirits, and placing more confidence in the remedies prescribed; whereas the sepoy almost universally, on being affected with this disease, give themselves up for lost.

REGARDING the medical treatment, I am aware that when it is entrusted to the commanders, or even the medical assistants, likely to be found in ships of this description, we must be cautious in recommending very active medicines: at the same time, I am so well convinced of the good effect of affecting the system with mercury, that in addition to the purgative powders, with calomel and jalap, you might, I think, recommend the use of mercurial frictions, or small doses of calomel, on the days that the purgatives are omitted. In cases where the dyspnœa is urgent, I would recommend pretty large doses of opium or laudanum, and particularly blisters, which seldom fail to give, at least temporary relief, on the accession of dyspnœa or vomiting, and cannot do harm.

I HAVE lately been in the habit of employing opium, in the form of friction, in many diseases; and I think, with a particularly good effect, in stopping vomiting, when all other means had failed. I therefore think, that to your list of medicines, you might, with advantage, add an ointment, containing opium, which also might be made a vehicle for conveying mercury into the system. The ointment I have commonly made use of, consists of two parts of strong mercurial ointment, and one part of pure opium, well rubbed up together. From half a drachm, to a drachm and a half, of this ointment, may be used at a time, and well rubbed in, on the stomach, or inside of the thighs. It has often an extremely good effect, in stopping vomiting, alleviating anxiety and dyspnœa, and allaying spasms. I have employed it with advantage in fever, cholera morbus and dysentery; as well as *Beriberi*, or if you please *Albina Hydropica*,

which I believe is some where made use of in the *Zeemans*, as the name of a disease.

YOUR account of the existence of this disease on board ship, did not surprize me; as five years ago, when describing it to Mr. BAILLIE, the Surgeon of the 78th Regiment, I learnt from him that he had met with it on a voyage from *Europe*, when in the sea service of the Company; but whether it was amongst the *Europeans* or some sailors, with which their crew might be completed, I now forget.

NOTWITHSTANDING the similarity of the cause of the two diseases, it certainly is not the same disease with *scorvy*. Besides the absence of some of the most characteristic symptoms of *scorvy*, and the difference in the mode of cure; the existence of *scorvy* in the 80th Regiment, and of *Beriberi* amongst the Company's *European* regiment, when doing duty together in the garrison of *Trincomalie*, and the entire exemption of each corps from the other disease, is certainly sufficient proof of this.

I CAN suppose the difference to depend on some nice chemical combination, which I have not sufficient confidence in my knowledge of the theory of gas to attempt to explain. The want of acescent vegetable matter seems to be the most frequent cause of *scorvy*, while the deficiency of stimulating animal food seems more often to favor the production of the latter.

ENCLOSURES IN THE ABOVE.

(No. 1.)

Extract from the remarks in the Sick Register of the 80th Regiment, Trincomalie, September 1798, transmitted to
Doctor EWART.

THE *Beriberi* is a disease of a peculiar nature, which has been extremely frequent, and fatal amongst all the troops, both *Europeans* and natives in this settlement.

In the milder stage of the disease, the patients are first attacked with some stiffness of the legs and thighs, and this is succeeded by numbness and cedema, sometimes paralysis of the lower extremities.

IN the course of a few days, if not prevented by medicine, these symptoms are succeeded by swelling of the whole body, attended with a sense of fulness of the belly, and more particularly with weight and oppression at the præcordia, dyspnœa, starting in the sleep, and all the usual symptoms of hydrothorax.

IN the latter stage, the dyspnœa and anxiety become extreme, the uneasiness at the epigastrium increases, attended with almost constant vomiting, and occasionally spasms of different muscles: the pulse becomes very feeble, the lips and countenance livid, and the extremities cold.

SOME fever, with delirium, often now accede, and terminate the life of the unfortunate sufferer.

IN the more sudden and severe instances, the patients, from the first, complain of universal debility and extreme oppression, anxiety and dyspnœa. In some of these instances, the progress of the disease is so rapid, that it carries off the patient in six, twelve, twenty-four, or thirty-six hours, after its first attack: more frequently; however, its duration is for several weeks.

IN a few cases, where the disease was no less fatal, there was not any swelling observable externally; but the patient, with the other symptoms, had evidently the bloated œcophlegmatic face, of a dropical person.

UPON dissection of different subjects, who had died of this disease, more or less water was found in one or all the cavities of the chest; most commonly in the pericardium, but in general, more inconsiderable than might have been expected from the violence of the symptoms. The cellular substance surrounding the heart, was in some instances, loaded with water; and the heart seemed, in two or three cases, of an uncommon size. In one instance, in which the progress of the disease had been very rapid, I found a large coagulum of lymph in the right auricle. The cellular substance of the lungs was, in many cases, loaded with water. In a few cases also, there was water effused in the cellular substance on the surface of the brain; and, in one instance, more than an ounce of water was collected in the ventricles. In most cases, water was found in the abdomen, and cellular membrane, throughout the body; and in many subjects there was a remarkable obesity, even after a long continuance of the disease, and of the use of mercury, antimony and other powerful medicines.

MEN of every constitution are occasionally attacked with the *Peritonæa*,
but

but the aged and debauched seem to be most liable to it; and men who have once had the complaint, are the most subject to it in future. I have remarked that a very great proportion of the patients seized with this disease, were men who were accustomed to lead a sedentary and debauched life, such as taylor's, shoemakers, &c. who when working at their trade, are often excused the duty of the field, and by their double earnings, are enabled to procure a larger quantity of spirits than the other men.

I HAVE never met with an instance of this complaint in a woman, an officer, or a boy under twenty; although persons of every description seem equally liable to the other diseases of the place, such as fever, flux, or liver complaint.

IT would appear, that a stay for some months on the station, is almost essential for the production of the disease; and that the greatest predisposition to it exists, when troops have been about eight or twelve months in the settlement.

THE 72d Regiment and Coast artillery landed here in July 1795. The *Beriberi* was with them most prevalent in the autumn of 1796; but they had little of it in March 1797, when it was extremely frequent with the 1st battalion *European* Infantry, who had arrived here in August 1796.

THE 80th Regiment relieved the 72d in March 1797, but suffered little from the disease, till the November following. The Honorable Company's *Malay* corps arrived here, from *Jaffnapatnam*, in June 1797; but the complaint did not appear amongst them till the January following, when it became very frequent and fatal. Two hundred drafts joined the 80th at *Trincomalie*, on the 3d of January 1798; but none of these men had the disease in January, February, or March, although it was then very frequent with the other men of the regiment: since that time however, these drafts have been at least as subject to it as the other men.

VARIOUS modes of cure have been attempted, in this disease; but I have of late uniformly pursued the following plan, with uncommon success.

IN the more mild cases, the patients are immediately put upon a course of calomel and squills. The perspiration and other evacuations are promoted

promoted by saline drinks, or small doses of antimonial or James's powder, and the strength supported by cordial liquors, most generally gin punch, which assists much the effect of the squills.

By these medicines, the symptoms are very often removed, in the course of a few days; except the numbness of the extremities, which generally remain longer than the rest. Pediluvium and stimulant liniments are then ordered to the extremities, and the patients are put upon a tonic plan, of bark and wine, or porter, which is continued for some time after all the symptoms have disappeared. In the more severe cases, where the dyspnoea, vomiting, spasms, or other symptoms are violent, it is necessary to apply blisters to the breast, to make use of fomentations, and the hot bath, and to exhibit the strongest cordials, and antispasmodics, as brandy, and particularly laudanum and vitriolic æther. By these means, I have in most instances, been enabled to relieve the dyspnoea, and other urgent symptoms; and procure time for the exhibition of the medicines mentioned above, which it is sometimes necessary to use for several weeks.

Amongst the convalescents from severe cases of this disease, I have often met with frequent painful cramps of the different muscles, most commonly of the extremities. They have been, in general, easily removed, by frictions of the part, with the addition of laudanum and æther internally; and their recurrence has been prevented by the general tonic plan. This symptom, however, seems of consequence in the history of the disease, as if it is allowed, that these spasms may occasionally seize the vital organs, they may serve to explain, why death happens, in many cases, so suddenly, although there is but little effusion.

THE men of the 80th Regiment have now seen such frequent instances of the disease, and of fatal consequences from it, that they seldom lose any time in applying for assistance, after they are attacked with the swelling, as they call it. From this circumstance, we now comparatively lose very few from the complaint.

UPON looking over my returns, I find we have only lost two out of seventy-eight men, attacked with the disease, in the course of the last six months.

THESE are the principal facts that I have observed, with regard to the history and cure of the *Beriberi* as it occurs at *Trincomalie*.

PERHAPS it may not now be improper to mention some of the various opinions that have been entertained, with respect to the nature and causes of that complaint.

I AM informed, that the Dutch surgeons conceived that it was occasioned amongst the soldiers, from their being very often obliged to stand in water, when on duty, during the rainy monsoons: but, although the disease has been very frequent this summer, almost no rain fell last season; and many men have had the disease, who were not here during the monsoon: besides if attention is paid to the different times when the disease was most prevalent with the different regiments, it will be found to depend, more upon the length of their residence on the station, than the natural season of the year.

SOME medical gentlemen have thought this disease was only a modification of *scurvy*, produced by the salt provisions, upon which the troops here are obliged to live a good deal; but besides the very great difference in the symptoms, and cure of the diseases, it is to be remarked, that when the 80th Regiment came here, a great many of our men were affected with scurvy, in consequence of the sea voyage, but these men were not more subject than others to the *Beriberi*. On the contrary, scarcely a single instance of the *Beriberi* appeared amongst the 80th at that time; while the 1st Regiment *European* Infantry were suffering much from it, and had not a single case of scurvy in their corps. The scurvy amongst our men was successfully combated by acid fruits, &c. but I have given the same medicines in cases of *Beriberi*, without the least apparent good effect.

IF I was to hazard a conjecture, on this subject, I should be apt to think, that by some stay on this station, the system was debilitated, by the particular diet made use of by the soldiers; which is certainly deficient in nutriment; and also by a constant exposure to the marshy vapours of the surrounding jungle, and tanks. If to these be added a sedentary life, and a long abuse of spirituous liquors, with possibly a preceding ague, the system is certainly in a state which must produce a predisposition to dropsy, to which I cannot help thinking this disease is much more nearly allied, than to scurvy. With this predisposition, I can conceive the disease to be frequently excited by the great variableness of the temperature at this place.

UPON this idea might be explained many circumstances attending the disease, such as its most frequently affecting the aged and debauched, its not occurring amongst the officers or boys, the different symptoms, and the mode of cure.

THE fatal termination of this disease seems, in many cases, to depend less upon the extent of the effusion, than upon the suddenness of it, and is also probably sometimes connected with spasms of the vital organs, as I formerly hinted.

I CONFESS there are some circumstances, with respect to the disease, that I cannot account for, in a manner satisfactory to myself. The most curious of these is, that I have never known it to affect any woman, although we have a great number both of *European* and native women attached to the troops, who live nearly in the same way, and are many of them as debauched as the men.

(Signed) T. CHRISTIE.

Trincomalie, 1st October, 1798.

(No. 2.)

TO H. HOLLOWAY, Esq.

Assistant Surgeon.

SIR,

OBSERVING that a case of *Beriberi*, has of late occurred in your hospital, I conceive that some account of the disease, as it appeared here, may be interesting to you; and therefore enclose you a copy of some remarks on it, which I inserted in one of my returns to Doctor EWART.

SINCE writing them, I have had few opportunities of making further observations on the complaint; as in consequence of the improvements in our situation here, the *Beriberi* now very seldom occurs.

I FIND however that my observation as to its non occurrence in boys or women is not universal, as since 1798, I have met with an instance of it both in a woman and boy.

I HAVE had reason to be confirmed in my opinion, that a spasm of the vital organs is occasionally the cause of the sudden death; from a very particular case, where, after the effusion was removed, the patient, for many weeks, was subject to violent spasms of the external muscles of the chest,

chest, attended with intermitting pulse; and excessive dyspnœa. These symptoms were repeatedly removed, by large doses of laudanum and æther, &c. but their frequent recurrence occasioned great exhaustion, and he was at length carried off by one of those spasmodic attacks. I apprehend the death of your patients must have been occasioned by a similar cause.

In addition to the squills, I have, in a few severe cases, employed a saturated tincture of digitalis, in doses of from twenty to forty drops, three or four times a day, with a very happy effect, from its strong diuretic powers.

I have the honor to be, SIR,

Your most obedient Servant,

(Signed)

THOMAS CHRISTIE,

Superintendent of Hospitals.

Trincomalie, 11th October, 1800.

(No. 3.)

Extract of a letter from Mr. HOLLOWAY.

TO THOMAS CHRISTIE, Esq.

Superintendent of Hospitals.

OF the three cases of *Beriberi*, which I have met with, during the time I had charge of the sepoy's here, all have worn the milder appearance of the disease, viz. stiffness, numbness, and œdema of the extremities, with weight and sense of oppression about the præcordia, and slight dyspnœa: these symptoms have been removed by calomel and squills: and the patients, who have all died, were, several days before their death, apparently free from disease.

THEY have died in their sleep, and two of them without a struggle: the third experienced a slight return of dyspnœa before he expired; but none of them had any appearance of spasm during their illness: either in the external muscles of the chest, or in the extremities. Among the natives, there is seldom an opportunity, from their prejudices, of learning any thing from dissection; but as dyspnœa and the oppression about the præcordia were by no means excessive, in any of the cases I have seen; effusion, it would appear, had not taken place to any considerable degree.

ON my arrival here, I learnt from Mr. PRITCHARD, that *Beriberi* occurred most commonly in this place, during the months of December, January, and February; and that he had met with very few instances of it at any other season of the year. Since August last, four or five cases of it have occurred, among the sepoy's here; partly perhaps occasioned by the unusual quantity of rain, that has fallen since that period, together with the poorness of a sepoy's diet; which last, however, strikes me as being the chief cause of the much greater proportion of sick, that we have here, than in other similar situations in *India*.

AT *Malacca*, where I was stationed a year and half; and in charge, for the most part of that time, of five hundred and fifty natives of the coast, the hospital return seldom exceeded the number of twenty; never, as far as I can recollect, that of twenty-five or thirty sick, each month; while, at this place, the hospital has seldom less than eighty or ninety, and sometimes as many as one hundred and fifty, from a number of men by no means proportioned to the difference in the sick list. The climate, to the eastward, was at the same time, to all appearance, equally moist and unfavorable with this, to the constitutions of natives; all the aromatics, and the provisions that the place afforded, were of the same kind as are procured here. Articles of food were, I believe somewhat cheaper than in *Columbo*, but their price higher than the sepoy's, from their custom of leaving great part of their pay with their families, could afford to purchase them at, without the assistance given them by government, in most of the principal necessaries for a native diet, such as salt, ghee, chillies, pepper, onions, tobacco and firewood, all which were regularly issued to the troops. With their remaining pay, they purchased fowl, fresh fish, or vegetables, as their cast or choice might direct them. Government here does not make any allowance of these things, without most of which a sepoy cannot subsist; so that the little money he has left from his family chits is taken up in the purchase of them; and he is precluded the ability of procuring fowls, fish, or vegetables, for his better nourishment.

Columbo, October 20, 1800.

(90)

(No. 4.)

MR. CHRISTIE, in a letter to Major General MACDOWAL, recommends the gratuitous issue, by government, of the whole, or a part of the articles mentioned by Mr. HOLLOWAY in the preceding letter.

(No. 5.)

MR. CHRISTIE informs Mr. HOLLOWAY that he has represented to government the subjects of his letter; and judging that any limitation of the family chits would cause discontent among the sepoys; has recommended, in preference, the gratuitous distribution of certain articles of food and condiment.

(No. 6.)

Extract of a letter from Mr. CHRISTIE.

TO WILLIAM COLHOUN, Esq.

Assistant Surgeon.

Dated Trincomalie, October 17, 1809.

I HAVE always considered *Beriberi* as a disease of debility; and probably the best preventatives are dry lodging, warm clothing, and a good nutritious diet, with temperance.

I AM disposed to conjecture, that on inquiry, you will find, it is in many instances occasioned, by poor living, and intemperance; and as this is a subject of great importance, I shall feel myself much obliged to you, for any remarks on it, containing the result of your experience and observation.

(No. 7.)

TO THOMAS CHRISTIE, Esq.

Superintendent of Hospitals, on Ceylon.

I HAVE perused with attention your observations on the *Beriberi*, as also a copy of a letter from the late Doctor EWART to you on the same subject. I have little experience of the disorder, except what its late prevalence

prevalence in the corps, especially towards the end of last month, has afforded. As this, however, has particularly directed my attention to its consideration, I do not defer to communicate, in obedience to your desire, such remarks as occur to me, relating to it, as well as the sources of inquiry, which I think may tend to throw further light on its causes.

THE recent cases of *Beriberi*, which I have had occasion to treat, have generally answered to your description of the commencement of the disorder, in its milder form.

At first, some tension of the lower extremities, with slight œdematous swellings, have appeared; accompanied, or perhaps preceded, by a sense of weight, or numbness; and often some impediment to the exercise of the muscles of the legs, particularly after having been for sometime in a state of quiescence. In a considerable proportion of patients, an utter inability to support themselves has supervened, in the progress of the disease; particularly, I think, following the decrease of the œdema and tension of the extremities, which last, I am inclined to think, is for the most part the symptom, that first marks the approach of the disease. In general, in the course of a very few days, the œdema, and tension have yielded to the use of remedies, particularly calomel and squills; which I have not in any case omitted to prescribe, either alone, or combined with other medicines. I have not met with the symptom of muscular spasms, and only in one case with the stirrings in the sleep, and cough, marking the presence of hydrothorax.

SOME circumstances, which have struck me relating to the cases, which had a fatal termination, I shall here particularize, more fully, than could be done in the space of my return appropriated to remark. The first patient, a *Musulman* under twenty, and said to have been, till last year, a stout young man, had been always remarked for his habits of parsimony. He had formerly been in the hospital, affected with *Beriberi*, attended with violent convulsive symptoms; but had, for some months before my arrival, been permitted to live at his own house. He was ordered to the hospital when I joined the corps, at which time he was reduced to a state of very great debility, with considerable appearance of anasarca, to which was added a good deal of dyspnoea, and other symptoms of hydrothorax.

UNDER the use of calomel and squills, to which I added opium, camphor,

phor, arrack, small doses of tartar emetic, with blisters, and other external stimulants, with a view to promote, as much as possible, the action of the extreme arteries and absorbents; the anasarca symptoms decreased very rapidly, and the dyspnoea was much relieved. I then directed my whole attention to supporting his strength; but my endeavours in this way, soon appeared to be vain. He gradually sunk in strength, and lost all appetite for food. His spirits, which had always been depressed, fell into a state of total despondency, which terminated in incoherence of thought. His pulse, becoming more and more feeble, and his whole body cold, he at last died, during sleep, without a struggle.

THE second fatal termination happened in a patient of the same cast, and nearly the same description, as the above, except that he had not been noted for parsimony. He also had long lingered, in his own house, after an attack of *Beriberi*, from which he had never recovered. He entered the hospital with a good deal of œdema, and loss of muscular power, but not so much depressed in his spirits, nor so much reduced, as the other patient. The same general mode of treatment was pursued, and produced a temporary diminution of symptoms; but the swelling soon began to increase again, and he became universally anasarca, notwithstanding the use of very large doses of calomel and squills. This patient, two days before his death, lost, for a short time, the power of articulation, but this symptom went off in about a couple of hours; and he said, while it lasted, he had had considerable pain about his throat. His pupils now appeared somewhat dilated. He was subject to vomiting for a day or two before he died, and the morning of his death, a diarrhœa supervened. For some days previous to death, this patient had also complained much of an universal sensation of cold. Little dyspnoea supervened, and he also died during his sleep. From the symptoms, and appearances, I suspected an effusion on the brain. The third patient, also a *Musulman*, about thirty, who, though a recruit, had saved a good deal of money, had been treated by Mr. HOLLOWAY, in the early part of the disease, with large doses of calomel and squills, and had, some time afterwards, on the appearance of a slight return of symptoms, used the same, in diminished doses, till within a few days of his death, when the calomel was omitted, from the soreness of his mouth. There was but little œdema present, and under a course of bark, with a proportion

proportion of arrack and opium, continuing at the same time the squills; with cream of tartar &c. but, for his usual drink, I considered him in a fair way of recovery. All the morning of his death, when he was suddenly seized with a most violent dyspnoea, that carried him off, in a few hours. I was at some distance from the hospital when the attack took place: as soon as I could, I prescribed opium and æther draughts, fomentations of the extremities, and a blister; but without, I think, any relief. I should be happy to be favoured with the opinion your extensive experience has led you to form, respecting the nature of this symptom. Is it spasmodic? May effusion on the lungs be considered as its cause? or, may the presence be supposed of torpor in the extremities, to induce such spasmodic affections? Does the symptom generally come on during sleep? As the most likely means of effecting recovery in *Beriberi*, and some other lingering diseases, I have been urgent in recommending removal, in all such cases, to the coast.

A PARTY of patients, of this description, were detained in a sloop, on which they were embarked, for eleven days, and at last disappointed of a passage. Having had much sea sickness, and eaten little or nothing, for great part of the time they were on board, many of the patients seem to have suffered in consequence; and one of them was found dead the morning after his return. I was permitted to dissect this patient; a circumstance seldom to be effected in a native corps. There was very little water in the cellular substance (on his return from the sloops there being little appearance of œdema,) but although he had been in a state of considerable indisposition, ever since an attack of *Beriberi* last year, I met with that remarkable symptom you notice, of a considerable quantity of fat, which was of a deep yellow colour. There was some water effused in the chest. On examining his viscera, they were found most completely empty, except his stomach, which contained some indigested rice; and, on inquiry, I learnt, that this patient, having neglected proper provision for his voyage, had for the greater part of the eleven days, had little or nothing to eat; and I was inclined to attribute his death to the sudden stimulus of the food he had taken on landing. This patient was a *Malabar*; he had been in the habit of saving from his pay. From all the circumstances of *Beriberi*, I am disposed to view it as a disease of torpor, affecting at first perhaps chiefly

the extreme vessels, especially the absorbents, and in its progress, the muscles of the extremities, which *ratio symptomatum* I think may explain, both the ordinary symptoms of the disease, and the occasional occurrence of spasms, both of the parts at first affected, and of other parts, as well as the speedy removal of the first symptoms, by the use of medicines, calculated to promote the extreme vascular action. I have, in a few cases of *Europeans*, formerly treated this disease with very striking success, by supporting a diaphoresis, for a considerable time, without interruption, by the frequent exhibition of powerful stimulants, as brandy, or gin, opium and camphor, with tartar emetic, in small doses, and with appropriate regimen, and management of the sick. In the nature of a native hospital, however, there are so many drawbacks on practice (especially unfavorable to a course of this kind) that I have been much disappointed of late in the sensible effect of medicines of every description: whenever, however, the effect of sudorifics has been observable, the patients have received, I think, at least, temporary benefit. Many causes may be assigned, on a consideration of which comparative ill success may be expected, in the practice of a native corps.

THE small provision made for the expence of hospital necessaries, unavoidably limits the supply of comforts to the sick; and the proper and attentive application of the nutrients, as well as stimulants (necessary in cases especially of extreme debility) difficult to apportion under the most favourable circumstances, is here perhaps impossible. But these are not the only disadvantages attending sepoy practice. The prejudices of the natives, the restrictions laid on them, as also the impossibility of preserving them from the risk of exposure, under the use of such medicines as require particular care, form a combination of obstacles, perhaps not to be surmounted. Mercury is a medicine they have a strong prejudice against, and I have reason to believe some patients have been so averse to medicine, as to have induced vomiting of what they had taken. All these circumstances tend to render the practice of native corps, in general, unsatisfactory, and any practical observation, founded on it, liable to much fallacy. But there is still another disadvantage, peculiar to the second of the sixth (which I am convinced contributes much to retard the cure, in this, and some other complaints, particularly in intermittent fever) the situation of its hospital, which is gloomy, almost surrounded by a jungle of jack trees, in the neighbourhood

neighbourhood of a marsh, and at a distance from the sea. I am also disposed to think, that the uncomfortableness of the platform, intended for the natives to sleep on, is detrimental, by inducing many of the patients to sleep on the ground outside.

I AM in hopes, however, in a few days, of getting a small temporary bungalow, on the sea beach, for the reception of the worst cases, which I expect will promote the success of cure much. And could the corps be cantoned near the sea, I have no doubt that this would prove a great preventative of sickness.

PERHAPS their advantage, in point of situation, is one, out of many other causes, that may have had an influence, in exempting the *Europeans* here, from any attack of *Beriberi*, during its prevalence amongst our men; who, by the by, may be more particularly liable to it, many of them having suffered from it formerly at *Cannalore*. When I have effected this removal, I shall be disposed to try the effects of the sand bath, a remedy said to have been used with success, and which I think promises to be useful, from the effect which has been observed of heat, in quickly removing swelling in an anasarcaous limb. For the symptoms of numbness and loss of power of the muscles, I should expect much advantage from the use of electricity, and shall (as soon as I can) furnish myself with a machine, for the purpose of trying its effects. Proper fomentations, immersions in a bath of blood heat, and the assiduous application of stimulating liniments, in all stages of the disease, I should suppose highly beneficial. But from want of materials, I have never been able to adopt any extensive application of stimulating embrocations; and the difficulty, without a large hospital establishment, of using all these means with sufficient care, has led me to the trial of bandages of *Empl. Calidum*; which I think may have a double effect, by the stimulus of the cantharides, and by their mechanical pressure, tending to promote absorption. As I am anxious to employ the practice you have so successfully followed, I shall esteem it a favor if you will inform me what doses you exhibited, how long you continued the course in general, &c. as also if you can direct me as to the distinguishing characters of the squill you use, and where it is found.

I SHALL now set down such remarks as have occurred to me, respecting the predisposing causes of *Beriberi*. I coincide with you in opinion, that it
is

is a disease of debility, and that the preventatives must be all such means, as tend to preserve a due degree of tone in the system; of which I should suppose one of the most powerful to be inhabiting an open airy situation (perhaps rather low than high.) From the great influence which change of air has, I believe uniformly, been experienced to have, in promoting the cure of *Beriberi*, as well as from some other considerations, I am inclined to lay particular stress on the respiration, as a preventative, of air as pure as may be. A good deal of exercise, I think, may also have an influence, in preventing the attack of this complaint; as it has never, I believe, been known to prevail in a marching army; and has been particularly rare, if I am rightly informed, amongst the pioneers, on this island. If this effect of exercise is true, its influence may perhaps be with propriety, in a great measure, ultimately referred to the tendency of exertion to promote the absorption of oxygen from the atmosphere; and the unquestionable influence of good living, as a means of prevention, may also perhaps, in part, depend on its similar tendency. I am led to consider a defect of oxygen as the principal agent in the production of the *Beriberi*; because whatever other debilitating powers have been present, this disease has never, I believe, prevailed, without the presence of a vitiated atmosphere. I cannot, however, pretend to sufficient acquaintance with the history, to speak positively as to this fact. I know that *Beriberi* occurred, both this and last war, at *Seringapatam*, where the vegetation is commonly scanty, probably from the presence of an uncommon quantity of putrid animal effluvia. Whether or not it has been known there, since the removal of this cause, I am not informed. That temperance is a probable preventative of *Beriberi*, cannot be questioned; yet, I have found on inquiry, that amongst the sepoys of the *parria* cast, by far the most debauched of the natives, only one case of this disorder has occurred; probably from their having no religious prejudices with respect to food, and from the labour of their families affording them the means of living better than the other casts. I cannot as yet speak from my own experience, as to the general proportion of cases of *Beriberi*, to the number of men, of each cast, present with the corps; an inquiry into which, may, I think, throw light on this subject; but according to the information I have received, from my black doctor (a very intelligent man) the proportions have been as follows. The
greatest

greatest number amongst the *Musulmans*. The 'next' amongst the *Gentoos* and *Malabars*; the next amongst the *Rajahpoots*; and lastly of all amongst the *Parriars*. The two last casts have almost entirely escaped the disease: only one woman of the corps has been affected. Perhaps these remarks, if accurate, might be explained as follows:—A certain quantity of some stimulus (perhaps especially oxygene) becomes habitual; the abstraction of a certain proportion of which predisposes to, or produces *Beriberi*. The *Musulmans* are, of all the natives, the most addicted to luxurious living on the coast: and have been accustomed to the use of much animal food, and spices; which they are prevented from procuring on this Island, by the dearth of all kinds of food, by the remittances they make to their families, by the still greater expence of supporting their families here, or in some instances by their own parsimony. For, inadequate as the allowances of a sepoy are, to supplying him with perhaps even the absolute necessities of life, three out of the four deaths, last month, happened to men of some property.

THE *Malabars* and *Gentoos*, being seldom affected than the *Moors*, may depend on the following circumstances. The labour of the families of many of them is turned to account, while those of *Musulmans* are an invariable burthen to them; and the poor living they are here subjected to, has not been preceded by the use of so much stimulant food, as in the case of the *Musulmans*. The *Rajahpoots*, who have suffered very little indeed from the disease, are a temperate people, accustomed to only one meal a day, which they can even here afford themselves, particularly as I believe they are less generally burthened with families, than the other casts of the corps. The degree of health enjoyed by the *Parriars*, I have above attempted to account for. I can conceive little peculiarity in the mode of life of the women, to hinder their being subject to *Beriberi*, except their more equal habits of exercise, and their exemption from exposure to weather, and from confinement on guards; and which is particularly harrassing to the men of our battalion, who have almost constant duty to perform, and probably exposes them to several debilitating causes, particularly sleeping exposed to damp, and irregularity in their supplies of food. The same circumstances, and their less fixed habits of life, may account for boys escaping the disease.

WITH a view to ascertain the influence of the family certificates, in producing *Beriberi*, I have requested a roll of the amount remitted by each sepoy, to be compared with my sick list; yet I do not think this will throw so much light, on the subject, as might be expected; for some of the men, I am led to believe, trading by means of their family chits, are enabled to live better than they could otherwise do, while others starve themselves, merely to save money.

I SHALL only notice one more fact on this subject. I am informed that *Beriberi* prevails here always during the northerly monsoon; when the wind, blowing over the Island, may be supposed impregnated with exhalations from the jungle.

I BEG of you to excuse the want of order, in the above remarks, which are not perhaps sufficiently digested to warrant my offering them to your attention; but I shall not fail to use my best endeavours, to collect such hints as may hereafter lead to more useful and correct investigation.

(Signed)

W. COLHOUN,

Assistant Surgeon,

Columbo, November 1, 1800.

2d Bat. 6th Regt. N. I.

(No. 8.)

MR. COLHOUN, in a letter to Mr. CHRISTIE, dated *Columbo* 15th November 1800, states, that he has near forty cases of *Beriberi* in hospital, and that several relapses have taken place. As it is yet early in the unhealthy period, he expects a season uncommonly sickly. The prevalence of the disease, and the number of relapses, he ascribes to the unfavorable situation of the cantonment, and especially of the hospital, joined to a want of sufficient nourishment. He recommends change of situation, a supply of nutrients and comfortable clothing; without which he fears that the prescription of medicines only, "will too often in the more severe cases, resemble the blowing up of a fire, not sufficiently supplied with fuel; and that very great exhaustion, and lingering illness at least, will often inevitably ensue."

(No. 9.)

TO WILLIAM COLHOUN, Esq.

Assistant Surgeon.

SIR,

I BEG leave to leave to offer you my acknowledgement, for your valuable and interesting observations on the *Beriberi*. I have noticed them particularly, in my report to General MACDOWAL, and have included in it some extracts from them, which will I hope tend to strengthen your representation, for the removal of your hospital, &c. and will point out to the commanding officer of the forces, the great attention you shew to every circumstance connected with the health of the corps under your charge.

THE squill I have made use of, in *Beriberi*, is the *Scilla Maritima* of LINNÆUS, the specific characters of which are, "*nudiflora lacteis refractis.*" It grows, in great abundance, on the beach here, and I believe at *Columbo*, as I have occasionally received the fresh roots from the store there.

I HAVE always used it in the form of pills, composed of equal parts of the dried powder, and of gum ammoniac. Of this I prescribe five grains, with a grain of calomel, every one or two hours, according to the urgency of the case. As soon as the mouth is affected, I begin to diminish the frequency of the dose, but continue the use of both medicines, until some time after all the symptoms are removed. I find it more easy to affect the mouth, in this complaint, than in most other general diseases; and usually succeed in producing ptyalism in the course of three or four days; and in as many more, the symptoms are frequently entirely removed. I have, however, in several cases, which in the end terminated favourably, been obliged to continue the mercury for six or eight weeks.

I HAVE often observed the great relief afforded the symptoms, by free perspiration; and with that view, was in the habit of prescribing small doses of JAMES'S powder; but having frequently found that it induced vomiting, which not only exhausted the strength of the patient, but prevented him from retaining the other medicines, particularly the calomel, on which I place the chief dependence, I have of late employed antimonials only in cases where the patient was robust, or the general health little affected. On the same account, I have sometimes been obliged

to omit the squills; and should be afraid that even small doses of tartar emetic would often be hurtful in this way.

To produce diaphoresis, I now generally trust to pediluvium, the warm bath, saline mixtures and a common diaphoretic draught at night.

IN a large proportion of the cases that have terminated fatally, a frequent and severe vomiting has come on, previous to death; and I consider the presence of great irritability of the stomach, as a symptom indicating the greatest danger.

I HAVE, in a few cases, where this irritability of the stomach existed, attempted to affect the system by mercurial friction; but by no means with an equally speedy or good effect, as from the calomel internally.

It appears, from my experience here, that in general amongst *Euro-peans*, the attack of *Beriberi* is more sudden, and the symptoms more severe, and distinctly marked, but that the proportion of cures is, with them, much greater, than with the natives.

THIS must proceed, in a great degree, from the disadvantages you enumerate, as attendant on the practice with natives; and also on some other circumstances, connected with their constitution; such as greater mental despondency, &c. &c.

I AM well aware of the great disadvantages, to which your practice is subjected in a native corps, from the prejudices of the natives, and other causes, which I have personally experienced, when accidentally in charge of the *Malay* corps, at a time when *Beriberi* was prevalent with them: although I prescribed the same remedies as for the *Euro-peans*, I could scarcely in any instance succeed in affecting their mouths, and the mortality was proportionally great.

I DO not recollect, that in any case, amongst the *Euro-peans*, I have seen the patient carried off in his sleep, in the way you mention. In most of the cases I have seen terminate fatally, there came on, previous to death, either a very great degree of dyspnoea, restlessness, and oppression, or a frequent vomiting.

THAT the dyspnoea is frequently occasioned, or increased, by spasms, I am convinced, from the external spasms sometimes accompanying it, and from the immediate and almost instantaneous relief afforded by strong stimulants; but it must also be, in many cases,

cases, dependent on effusion, as the quantity of serum found in the cellular substance of the lungs, and cavities of the chest, is often considerable.

I HAVE never made use of the sand bath, but have experienced the most happy effects from the common hot bath.

THE actual cautery I have employed in several cases, but have not experienced the happy effects from it, which I was led to expect, from the accounts I had heard of its surprising success, with the men of the *Bombay* native grenadiers at *Columbo*.

I HAVE often wished to try electricity in cases of this kind, and with that view provided myself with an electrical machine; but partly from the moisture of the atmosphere here, I never could succeed in exciting electricity sufficient for medical purposes. I shall be happy to hear you succeed with a remedy, the known properties of which promise so much.

ALTHOUGH I cannot coincide with you in opinion, that a defect of oxygen is the principal agent in the production of *Beriberi*, yet I am convinced that an impure air, with other debilitating causes, tends much to predispose to it; I attribute the late healthfulness of this garrison, and the rare occurrence of *Beriberi*, in a great degree, to a free circulation of pure air, in consequence of the cutting down of the surrounding topes and jungle.

WE have had it here at all seasons of the year, and at different times with different corps; but upon the whole, I think it has been most prevalent in the North-East monsoon, which I attribute to the greater moisture at that season of the year; for we have then a constant sea breeze, and a most abundant vegetation.

As a specimen of the disease, as it often occurs here without any cedema, and of the ease with which it is sometimes cured, I enclose you a copy of the last case of *Beriberi* which has occurred in the 80th Regiment.

I AM sorry to find the platform in your hospital is so awkward and uncomfortable; the sepoy hospital here is provided with corded cots, which are very commodious.

If you was to apply for similar cots for your new hospital, I think

they would be granted, and I am convinced it is of the greatest utility to prevent the sick from sleeping on the moist ground.

I have the honor to be, SIR,

Your most obedient Servant,

(Signed) THOMAS CHRISTIE,

Trincomalie, November 23, 1800.

Superintendent of Hospitals.

1800.

MATTHEW HALLIGAN, *ÆTAT.* 24.

October 14. WAS admitted last night, with excessive dyspnoea, attended with great swelling of his belly and bloated countenance. He took a dose of laudanum and æther, had a blister applied, and received a purgative glyster, with considerable relief. He still complains this morning of considerable dyspnoea, with numbness and want of feeling in his lower extremities, but without any œdema, although his belly is still swelled, and his face has a leucophlegmatic appearance. Pulse 90, and oppressed. Tongue white with thirst, skin of the natural heat; no appetite. He says he was suddenly seized with his present symptoms yesterday afternoon, and attributes them to no particular cause.

Capt. Cal. gr. i. et Pill. scillit. gr. v. omni horâ. Bibat Gin Punch liij indies;
et Rept. Clys. Purg.

15. THE glyster procured loose stools, and he has made urine in considerable quantity. His belly is less swelled, and the numbness is now confined to his feet and ancles, but he still complains of considerable dyspnoea. Pulse 90 and fuller. Tongue clean with less thirst, skin cool, no appetite, but he slept well.

Contr. Pill. et Gin Punch. Repetr. Clysma et applicet. Vesic.

16. THE blister rose well, with much relief to his dyspnoea. His mouth begins to be affected, and his urine is copious. His belly is less swelled, the numbness is now confined to his toes. Pulse 80, and less. Tongue clean, skin cool. Belly open; appetite improves.

Capt. Pill. Cal. et scillit 8ties indies. Contr. Gin Punch et utat Pedil.

17. His mouth is affected with ptyalism, and his urine is limpid.

His

His symptoms are all removed, except the numbness, which is inconsiderable.

Capt. Pill. Cal. et scillit, quater indies et contr. alia.

19. He makes no complaint but of slight numbness, and soreness of his mouth. Functions natural.

Omittr. Cal. Contr. alia.

22. The numbness is removed, and he has had no return of his other symptoms. Functions natural.

Contr.

31. MOUTH nearly well, and he has had no return of his symptoms.

Omittr. Medica.

NOVEMBER 2d. Mouth well.

DISCHARGED CURED.

(No. 10.)

MR. CHRISTIE, in a letter to Major General MACDOWAL, dated *Tricomali*, 26th November 1800, after recapitulating the substance of Mr. COLHOUN's report, recommends that the hospital be removed to a dry and open spot, near the sea beach, and furnished with cots, made like the frame of a common barrack cot, and corded with coir rope; and that during the sickly season, the *Beriberi* patients should be supplied with mutton, ghee, curry stuff, and a proportion of arrack, not exceeding a pint daily.

For the prevention of the disease, attention is necessary to the good dieting and lodging of the whole corps, and the men should have a facility of procuring blankets, to defend their bodies from the cold.

(No. 11.)

MR. COLHOUN informs Mr. CHRISTIE, (dated *Columbo*, 1st December 1800,) that his hospital has been removed to a good house near the
sea,

sea, and the sick are now supplied by government with such articles of diet as Mr. COLHOUN judges necessary, together with an allowance of arrack from the commissary's stores. These changes have taken place about eight days ago, and in many cases very happy effects are already observed. '

(No. 12.)

TO T. CHRISTIE, Esq.

Inspector of Hospitals on Ceylon.

SIR,

I AM extremely sorry that I have not yet been able to arrange sufficiently to submit them to you, the observations which the very uncommon prevalence of *Beriberi*, has afforded me an opportunity of making on it. The disease has this year spared no description of men in the corps, except the puckallies and camp colourmen; even to the commissioned native officers; and its attacks have of late been more frequent than ever; probably owing, in a great measure, to the small number of men who remain for duty being harraßed with incessant guards, during which most of them are probably irregularly supplied with victuals, and some of them, I understand, who have no families, to avoid the trouble of cooking, take little or no sustenance, except that preparation of dried rice which natives generally live on a-board ship. To these and other causes, which I formerly noticed, is added another, probably very powerful agent, the despondency which must be felt by a set of men, in their situation, viewing the very extraordinary frequency of a disease, which without change of climate, has been almost universally fatal to them in former years.

It is very unfortunate, that the sepoy's have invincible prejudices against the remedies generally used in this disease by *Europeans*, and in consequence seldom report themselves sick while at all able to perform their duty; trusting to the promises of cure which are always confidently made by their Native doctors, who certainly succeed in reducing the oedematous swellings very quickly, by means of drastic purgatives. Perhaps it is in some measure owing to the great debility thus induced, that I have not found

the

the use of calomel so effectual a remedy, as it appears to have proved at *Trincomalie*. Almost all who have died, at least the greater part, had their mouths affected by it, and an idea prevails amongst them, that a sore mouth is frequently the immediate forerunner of death. It has certainly prevented the possibility of their being sufficiently nourished, and this, with the despondency to which it gives rise, and their conviction of the baneful effect of Mercury as a medicine, (which perhaps considering the unavoidable risk they run, from the effect of exposure under its use, are not altogether ill grounded,) often probably are considerable obstacles to the cure. These considerations would perhaps at all events have led me to a trial of other remedies; but the impossibility of procuring a sufficient quantity of calomel to answer my purpose, has obliged me to do so. My plan has been to promote absorption, by means of emetics, purgatives, or a flave bath (of which I am inclined to prefer the latter) with the use of the nitric and citric acids, assisted with the tonics, in as many cases as my stores would permit. My practice has been chiefly confined, for some time past, to the citric, on account of a deficiency of nitric acid; and I have now many patients in a very promising way, who have used hardly any other remedy. I must take a future opportunity of sending you more particular observations, with cases, in which the above remedies have been used, as well as of my trials with the nitric acid, which perhaps, (as may also calomel) may act by oxygenating the system; and from all its effects, particularly as one of the ferbentia of great power, is, I think, a very likely remedy in *Beriberi*. I was at a loss for some time to procure the medicine, but I find I can prepare it in moderate quantities, by a very simple process, which I learnt some years ago from a native doctor, who told me, this acid had been used for ages, amongst the natives, in obstructions of the spleen: a common chatty or earthen pot, is used as a retort, and a bottle, with a hole in the bottom of it, as a receiver. The bottle is covered, during distillation, with wet cloths, and the acid is condensed in the hollow round the bottom of it.

I have of late been in the custom of obliging the patients to walk out, several times a day, and am convinced that particular attention to this will do more towards the cure of *Beriberi*, particularly in preventing the palsy of the limbs, so apt to supervene, than all other means combined.

Major GRAY, commandant of the corps, at my request, took charge of ten patients, to be treated in this way: they have had hardly any remedy except lime juice, arrack and good victuals, and are now nearly free from complaint.

WHERE the paralytic symptoms have come on, I think the Sal. comp. Cerv. ust. with Tinctur. Cantharid. has in several instances had a good effect; but there is but a small proportion of this in the stores, which necessarily circumscribes my practice. I have not yet been able to try electricity, nor can I use frictions with camphor, on account of the great expence, so as to be of much use. One pound of camphor here costs twenty six dollars, so that supposing me to use only fifty pounds in the month, which I think the most moderate calculation to be of any service, this alone would cost me 250 pagodas per month; besides the price of the oil and the hire of a great number of coolies, that would be necessary to apply it.

(Signed)

W. COLHOUN,

Assistant Surgeon,

Columbo, January 1, 1801.

2d Bat. 6th Regt. N. I.

(No. 13.)

Extract of a letter from Mr. CHRISTIE to Mr. COLHOUN, dated Trincomalie, 16th January 1801.

ALTHOUGH the weather here has been uncommonly moist and rainy, and the number of troops being much increased, many of them are but ill accommodated, yet we have scarcely had a single case of *Beriberi*, either amongst the *Europeans* or natives this season; I have therefore had no opportunity of making any farther observations on that disease, since I last wrote you.

LIME-JUICE I tried in several cases, soon after my arrival here, but did not find very beneficial effects from it in *Beriberi*, although I employed it with success at the same time, in scorbutic cases. *Europeans*, from their constitution, and mode of life, seem in most diseases, to require more active remedies, and more decided practice, than is necessary with natives.

I HAVE

It has been very generally successful in curing *Beriberi*, among the *Europeans*, by the use of calomel, but not so much so with the natives; which I attribute chiefly to their irregularity in taking it, and to the advanced state of the disease before they generally begin its use.

The nitric acid I have never made use of in *Beriberi*; but from its known qualities, and great efficacy in diseases, where mercury has been usually employed, I should be disposed to preface very happy effects from its use in *Beriberi*.

The acid, when successful, in the cure of disease, possesses one very great advantage over mercury, that instead of the debilitating effects almost universally produced from the latter, it generally increases the appetite, and gives tone to the *primæ viæ* and whole system.

When I employ the acid in large quantities (which I have frequently done in syphilis, hepatitis and dysentery) I find it necessary, in order to prevent its local effects on the teeth and mouth, to order the patients to suck it through a tube, for which purpose a pierced rattan answers remarkably well: made use of in this way, I have seldom or never observed the acid affect the mouth.

(No. 14.)

CASES of *Beriberi* or *Asthma Hydropica*, extracted from the Journals of different Surgeons on *Ceylon*.

Extract from Mr. CHRISTIE'S *Journal of the sick of the 80th Regiment at Trincomalie*.

C A S E I.

JAMES AIKENS, (ÆTAT 41), by trade a shoemaker.

May 1, 1799. Complains of severe dyspnoea, without any cough, or particular pain in his chest, he also complains of great numbness of his legs and thighs, and there is considerable œdema of his lower extremities, pulse 80, tongue furred, with thirst; skin cool, belly regular, urine very scanty, and high coloured; face bloated. He has resided sixteen
months

months at *Trincomalee*, is a debauched man, and was discharged from hospital, on the 14th ultimo, cured of a diseased testicle, by the use of mercury, which never could be made to affect his mouth. He says that since that time he has had a bowel complaint, with pain of his right side, which was removed by a blister: says, that he has had numbness of his legs for several weeks past, but that he only observed the œdema on the 29th, when he had also some swelling of his neck and face.

Capt. Cal. gr. i et Pill. scillit. gr. v. omni horâ.

Bibat Gin Punch. ℥iij in dies.

2. He took his pills, and his urine was copious and limpid. The œdema of his limbs is somewhat less, but the dyspnœa continues; and there is some apparent swelling of his belly. Pulse 80, rather feeble. Tongue furred, skin cool, belly open. The former blister is healed.

Applicet. Empl. vesicat. mag. Pectori. et

Habt. vin. Gallic. ℥viiij Cont. alia.

3. He took his pills without uneasiness, but vomited some this morning. Blister rose well, and the dyspnœa seems relieved. He has made above four quarts of urine, and the œdema is less, but the numbness continues: mouth not affected. Functions as yesterday.

Repetr. Med.

4. Mouth not affected, but he makes his urine copiously, and all his symptoms seem relieved. He has had no return of the vomiting, and slept well. Pulse firmer, tongue and skin natural, belly regular, appetite tolerable.

Contr.

5. Mouth not affected, but he has had watery stools, and makes a great deal of urine. He makes no complaint of dyspnœa, and the œdema and numbness of his lower extremities are relieved. Pulse, tongue, and skin natural; appetite tolerable.

Contr. et utatr. ol. Terebinth. Linim.

7. Mouth begins to be affected, and he makes his urine copiously.

He

He has had no vomiting nor any return of the dyspnœa. The œdema is inconsiderable, and the numbness diminished. Pulse, tongue, and skin natural; appetite tolerable.

Contr.

9. MOUTH sore, and he spits a little; he has watery stools, and makes urine freely. He has had no return of vomiting or dyspnœa, and the numbness and œdema are less: functions natural.

Omittr. vin. Gallic. Contr. Alia.

10. MOUTH but slightly affected, the numbness diminished, but the œdema seems to increase. Functions as before.

Contr. et Capt. Tinct. Digital. gtt. XXX ter indies.

11. His medicines occasioned no sickness, and he made his urine freely. The dyspnœa and numbness are removed, and the œdema is not considerable; functions as before.

Contr.

12. As yesterday.

Contr. et Capt. Tinct. Digital gtt. XXX quater indies.

13. He has had no sickness from his medicines, and he spits a little. He has made above a gallon of urine, and his stools are frequent and watery. The œdema is almost removed, and he has had no return of the dyspnœa or numbness; functions natural.

Contr.

14. The œdema is entirely removed, but he had spasms last night of the Gastrocnemii muscles. He spits a little, makes a great deal of urine, and has watery stools. Pulse, tongue, and skin natural; appetite good.

Capt. Pill. Cal. sexies indies. Contr. alia
et utat. ol. Terebinth. Linim.

15. He has had no return of the spasms, and makes no complaint but of debility. Functions as yesterday.

E c

Capt.

Capt. Tinct. Digital. gtt. XXX bis in dies, et Contr. Alia.

16. No complaint but of debility.

Omitt. Tinct. Digital. et Contr. Alia.

17. No complaint.

Capt. Pill. Cal. quater, et Pill. Scillit. Sties in dies. Habt. G. P. ℥ij indies.

18. Pill. Cal. No. ij et Scillit N. vj in dies.

19. Omitt. Pill. Cal. Cont. Pill. scillit. et Gin Punch.

22. No complaint. Functions natural.

℞. Sal. Mart. gr. vj.

Kali ppt.

Gum Myrrhæ ana gr. xij.

Aq. Menth. pip. ʒi. fiat hauff.

ter in die sumend. omitt. alia.

31. Mouth well. He has had no return of his symptoms, and enjoys good health.

DISCHARGED CURED.

C A S E II.

JOSEPH DEAN (ÆTAT. 28).

May 1, 1799. HE complains of severe dyspnœa, increased by exercise, with a sense of weight at the epigastrium, but without any pain in his chest. He also complains of numbness and want of feeling in his lower extremities, but no œdema is observable. Pulse 66, tongue and skin natural, belly rather costive, urine high coloured, appetite tolerable. He is a strong man, but lives irregularly, and had an attack of *Beriberi* about a twelve month ago. His present symptoms are of five days standing.

Capt. Cal. gr. i et Pill. Scillit. 6ies.

et Bibat Gin Punch ℥ij in dies.

2. THE pills occasioned no uneasiness, and his urine was limpid, but the dyspnœa and numbness continue undiminished. Belly open, other functions as yesterday.

Rept.

Rept. Med. et applicet. Empl. Vesic. Pectori.

3. The blister rose well, and the dyspnœa is relieved, but the numbness continues. Belly open, other functions natural.

Contr.

4. MOUTH not affected, but he makes his urine freely. The numbness continues, and the dyspnœa was increased last night with some appearance of swelling of his belly. Pulse 72, tongue and skin natural, belly open, appetite tolerable.

Capt. Pulv. antim. gr. v. in bolo. ter in die. et Contr. alia;

5. MOUTH begins to be affected. He had a slight increase of dyspnœa last night, but he now breathes more freely than at any time since he came into hospital. The numbness continues, pulse and tongue natural, skin cool, and he sweats a good deal; urine copious, belly open, appetite tolerable.

Capt. Pill. Cal. Bol. antim. et Pill. Scillit ana No. 1. quater in dies.
Contr. G. P.

6. MOUTH sore. He had watery stools, sweated a good deal, and made urine freely. The dyspnœa is now inconsiderable, but the numbness continues. Pulse, tongue, and skin natural; appetite good.

Reptr. Pill. et Bol. ter in dies. Contr. G. P.

7. He spits a little, perspires gently, has watery stools, and makes urine freely. The dyspnœa is removed, and he makes no complaint but of numbness of his lower extremities. Pulse, tongue, and skin natural; appetite good.

Capt. Pill. et Bol. bis in dies. Contr. G. P. et Linim.

10. MOUTH continues sore, and he makes no complaint, but of numbness of his lower extremities, which is much diminished. Functions natural.

Omittr.

Omittr. Pill. et Boli. Contr. G. P. et Linim.

R. Ferr. vitriol. gr. vj.

Gum. Myrrh.

Kali ppt. ana gr. xij.

Aq. Menth. pip. ʒi fiat Haust. ter in die sumend.

20. THE numbness is removed, and he makes no complaint.

Capt. Haust. Ferr. vitr. bis indies.

24. DISCHARGED cured.

C A S E III.

MICHAEL BRODERICK, (ÆTAT 27.)

May 1, 1799. Complains of extreme dyspnœa, with anxiety and oppression, but without any particular pain in his chest. He also complains of numbness and slight œdema of his lower extremities, particularly of his left leg. Pulse, tongue, and skin nearly natural. Urine high coloured. Belly regular, no appetite. He had an attack of *Beriberi* about a twelve month ago, and says that he has had some degree of numbness and œdema for a week past, but that the dyspnœa only acceded yesterday, at half past four P. M. when he was dressing for parade. He had a large blister applied last night, which rose well, and took two doses of laudanum and spirit of nitre, with considerable relief to the dyspnœa.

Capt. Cal. gr. i. et Pill. scillit gr. v. in. Pill. 8ties in dies.

Bibat Gin Punch ʒij. in dies; et si dyspnœa urget,

Habeat. Laud. et spt. Æther Nitr. ana gtt. C pro. re nat.

Habt. etiam Clysm. Laxans stat.

20. THE glyster operated once. The pills occasioned no sickness, and he made more urine. The dyspnœa is less, and he had no occasion to make use of the drops. The œdema is inconsiderable, but he complains much of the numbness. Pulse, tongue, and skin nearly natural; no appetite.

Contr.

Contr.

21. MOUTH not affected, but he sweats some, and makes urine copiously. He has not returned from the effluvia. The dyspnœa and œdema are inconsiderable, and the numbness is relieved.

Contr. Pill. Cal. et Scillit. et G. P.

Capt. Pulv. Jacob. gr. v. in bolo ter indies, et

Fricat crur. oleo Terebinth.

22. MOUTH not affected, and his urine is rather scanty, but he had frequent watery stools, and sweats a great deal. The dyspnœa and œdema are removed, and the numbness is diminished. Functions as before.

Contr.

23. MOUTH affected, and he spits a good deal: he also sweated some yesterday, but his urine is still rather scanty, and he had only one stool. The numbness diminished. Functions nearly natural.

Capt. Pill. Cal. et Scillit. ter indies. et Contr. alia.

24. He spits freely, makes urine copiously, sweats a good deal, and has watery stools. He has had no return of dyspnœa or œdema, and the numbness is almost removed. Pulse, tongue, and skin natural; appetite good.

Omitt. Pill. Cal. Capt. Pill. Scillit.

et Bol. ant. bis. indies. Contr. G. P.

25. MOUTH nearly well, the numbness is removed, and he has had no return of œdema or dyspnœa. Functions natural.

Capt. Haust Ferr. Vitriol. bis indies. omitt. alia.

June 17. MOUTH well, and he has had no return of his symptoms.

DISCHARGED CURED.

*Extracted from Mr. C. ROGER'S Journal of the sick of the
Bengal Artillery at Trincomalie.*

C A S E IV.

HUGH FORSTER, BENGAL ARTILLERY.

Trincomalie, May 13, 1803. ARRIVED from *Candy* in a convalescent state from *Beriberi*: he complains at present of dyspnoea, particularly in a recumbent posture, great general debility and total paralysis of the upper and lower extremities. His countenance is somewhat bloated and fallow, and his whole body anasarcaous, and the scrotum and prepuce much swelled, as well as his limbs, which pit on pressure. Pulse tolerably full, tongue clean, skin dry and cool, belly regular, good appetite.

Capt. Bol. ex Calom. et pulv. ant. ana. gr. iij.

Habt. vin. alb. ibi indies.

Fovr. artus, et affricat. ol. volat.

May 14. HAD several free purging stools yesterday and sweated a little in the night. Slept badly on account of the dyspnoea, and a slight cough, urine scanty and high coloured.

Capt. Pill. Cal. gr. ij et Pill. scillit. gr. v. ana. No. iij indies.

H. S. Bol. ex. Pulv. antim. gr. iij et opij gr. i.

Contr. vin. et alia medicamenta.

15. ANASARCAOUS swelling of the scrotum and penis much reduced, but the limbs continue greatly swelled, and paralytic: thinks the dyspnoea less urgent, and rested better last night. Belly rather costive, urine freer. Pulse weak, with occasional intermission; debility great; appetite tolerably good.

Reptr. Pulv. Jalap. C. ʒ ij.

et h. s. reptr. Bol. diaphoretic.

16. HAD several copious watery stools from the physic, and he continued very easy until about ten P. M. when he was suddenly seized with a regular and severe paroxysm of fever, which lasted about six hours, during
which

which he experienced an increase of dyspnoea and cough, and vomited some bile : his appetite is gone : anasarcaous swelling of the scrotum again returned.

Omittr. Pill. Scill. Capt. Pil. cal. vi in dies. vin. lbifs.

17. Continued free from fever yesterday, and passed a tolerably good night ; but at eight o'clock this morning, a paroxysm of fever returned, and he at present labours under the hot stage. Pulse quick, feeble, and intermitting, great dyspnoea, and anxiety at the præcordia : countenance much bloated, lips livid, skin hot and dry. Tongue furred ; eyes languid, with a disposition to coma, and slight delirium.

Capt. Stat. Haust. ex æther et L. L. ana gtt. XL.

Bibat Julap. salin. cum spt. Nitr. Dulc. Vin. u. a.

About noon the comatose and delirious state increased, and at five P. M. he expired.

APPEARANCES ON DISSECTION.

On opening the thorax, about two pounds of serum were found in the general cavity, of a reddish tinge, and nearly twelve ounces of the coloured fluid within the pericardium. The heart itself was considerably enlarged, and relaxed in its muscular texture, which as well as the pericardium and pleura, was of a pale macerated appearance : the lungs were tinged with dark coloured blood, and abundance of frothy serum issued from incisions made into the cellular part. The abdomen contained four or five pounds of yellow serum ; the intestines were uncommonly pale, and distended with air ; the liver was of a large size, but apparently sound, and the gall bladder was tinged with bile. The cellular membrane, over the whole body, remarkable for its obesity and the anasarcaous state was general.

CASE V.

JOHN PALTERS, BENGAL ARTILLERY.

May 13, 1863. Arrived this day from *Candy* in a convalescent state from *Fevers*. The symptoms at present are debility, slight dyspnoea, œdema,

œdema, and numbness of the lower extremities, and swelling of the scrotum and penis. Urine scanty. General appearance good; appetite and other functions natural.

Capt. Stat. Pulv. Jalap. C. ℥ij.

et h. s. Bol. Calomel. et antim. ā ā gr. v.

14. POWDER produced copious watery stools, and he perspired freely in the night, and rested tolerably well, anasarcaous swelling of scrotum diminished.

Capt. Pill. ex Calomel. gr. ij. Pill. ex Pulv.

Scill. gr. v ā No. iij indies. Pill. ant. gr. iv. h. s.

Fovr. art. et affricat ol. volat. Habt. vin. alb. lbj. indies.

15. PILLS agree with his stomach, œdema of extremities slightly diminished, and he has little dyspnœa in any posture. Tongue clean; belly open.

Contr. Pill e Calomel. et scill. Vin.

16. Urine sensibly increased, anasarcaous swelling of scrotum much reduced, rests well at night, appetite continues good.

Reptr. Pulv. Jalap. ℥ij Pill. ant. et Calomel a gr. v. h. s.

Bibt. Pot. acid. veget. ad libit.

17. HAD copious watery stools from the physic; perspired freely at night. Mouth begins to be affected, urine greatly increased.

Reptr. Pill. cal. et scill.

19. MOUTH gets sorer daily, with slight ptyalism. Dyspnœa entirely gone, and the œdema of extremities rapidly diminishing, and do not now pit upon pressure.

21. MOUTH fully affected; urine continues great in quantity, and the œdema daily decreasing: swelling of the scrotum and penis gone.

Capt. Pill. Cal. et Scill. a No. i om. hor.

et Contr. alia.

24. MOUTH continues sore, with moderate ptyalism. Œdema of extremities

tremities entirely reduced: the great flow of urine still continues. Belly rather costive; other functions natural.

Captr. Pulv. Jalap ʒij.

Omitt. Pill. Cal. et scill. et Bol. ant. Contr. vin.

29. BEGINS to walk about the hospital, and makes no complaint but of weakness and sore mouth.

Habt. Cerevis. ʒij indies.

Captr. Pulv. Cort. Peruv. ʒfs 4ter in dies.

30. IMPROVES in strength daily, but his limbs are still weak and stiff. Bark agrees well.

31. MOUTH well, functions natural.

Contr. Cerevis. et Pulv. Cort. Peruv.

Discharged cured in the course of June.

*Extract of Mr. WM. ANDREW'S Journal of the sick of the
19th Regiment at Trincomalie.*

C A S E VI.

JOHN HALKETH, (ÆTAT. 53.) His Majesty's 19th Foot at *Trincomalie*.

October 1, 1802. This man was admitted, late in the month of September, with œdema, and the usual symptoms of *Beriberi*, which he had had a long time before he applied for relief. The swelling of the left leg was much greater than that of the right, and he thought it owing to a strain he got about twelve days before in a state of inebriety. Mouth is slightly affected by the mercury, and urine is in a slight degree increased, but the swelling of extremities continues equally great, together with the numbness and pain. His breathing is at times difficult. Pulse continues irregular, and from the great debility he complains of, I am afraid he will not do well.

Contr. Mercur.

Contr. Cin Tunch.

Pill. scill. &c. vj. indies.

Brandy lbs indies.

October 6. THE swelling of extremities is not in the smallest way decreased, if any thing, it is more than last reported, mouth is pretty well affected by the mercury, but urine is very scanty. The digest goes worse. Pulse continues irregular and frequent, and appearances bad. Blisters have been applied to chest, and extremities, and dressed with ungt. cantharidum: frequent warm baths have been employed to no purpose. The difficult breathing is now more urgent than before, and he inclines much to vomit.

Mist. æther et Laudan.

Rept. ungt. &c. alia.

7. THE difficult breathing has been relieved for a short period, since yesterday's report, and sometimes been more distressing. He complains much of it, and the great pain and numbness in legs and thighs, which are about the same size as yesterday. He has made about three ounces of urine, of a very high colour. The inclination to vomit still continues, and in the night he twice threw up some green bitter matter. Functions &c. as yesterday.

Mist. Crem. Tart. et spt. Nitri.

Rept. ungt.

Mist. Æther et Laudan. Rept.

8. He died about six this morning, after a distressing night, with difficult breathing,

On opening the abdomen, a good deal of fluid was found, and in the thorax likewise. The heart was large and soft, and more water found in the pericardium than before seen.

C A S E VII.

CHARLES COOPER, (ÆTAT. 45.)

October 19. Complains of great numbness and pain in the lower extremities, which are much swelled and œdematous; he likewise complains of some difficulty in breathing; and of great debility. Pulse is frequent and irregular: tongue white and dry, and face somewhat swelled. Thirst is urgent, and he says his head and arms ache a good deal. This man was discharged the hospital about sixteen days ago, since which time he has scarcely been sober a day, except the last five or six days, which period he has been in the guard house. He says the day after he was sent there, the swelling in his legs began, and that they have continued to increase since. Urine is very scanty and high coloured.

Sumat Pulv. Purgant.

Affricet ungt. Hydrarg. bis indies.

Mist. Tamarind: et punch ℥ij.

23. The jalap operated well, and he has made more water than before. The œdema and pain of lower extremities continue in the same way. The dyspnœa is somewhat relieved. Pulse &c. as before.

Contr. ungt. Hydrarg.

Reptr. Mist. Tamarind.

Pill. Cal. N. iv indies.

Pill. scill. N. vj indies.

22. The swelling and pain in lower extremities are much abated, and the dyspnœa removed: he complains much of debility, and of some head-ach; gums are slightly affected, and urine is increased.

Contr. Remed. u. a. Habt. sp. Vin. Gall. ℥ss. indies.

24. The œdema of extremities is removed. Gums more sore, urine in good quantity.

Omr. Pill. Cal. Contr. alia:

25. LAST evening he complained of great numbness of his right leg and thigh, and the whole right side, together with a partial loss of motion in the right arm, with a sense of heaviness and loss of feeling in it, and through the whole of the side. He is now unable to articulate, and deglutition seems difficult, and he makes a motion as if to make me understand his jaws were painful or fast, and exerts himself apparently to open his mouth wider, but cannot. Pulse is more full and regular than before; he perspires profusely, and has made a good quantity of water. Blisters have been applied.

Contr. ungt. hydrarg. fort.

Sumat mistur. antispasmod. dos. i. om. horâ.

Inject. anodyn.

26. HE has not been able to swallow any thing since yesterday; stools have been involuntary and urine: he remains otherwise in the same way. Injections of opium &c. have been tried, but without effect, as they are not retained. His eyes have a particular shining appearance, and pupil of the right is dilated. Nostrils are drawn in: some degree of strabismus is observable in the right eye.

Contr. Medic.

27. THE strabismus became more evident, much steror in breathing came on: stools and urine continued involuntary; jaw continued closed, pulse became irregular, and he died this morning.

ON dissection, the heart was found larger than usual, some water in the abdomen, and a little more than is usual in the pericardium; nothing more particular in chest or abdomen. The head was not opened.

NOTE ON COOPER'S CASE.

THE propensity to effusion in every part of the body is very remarkable in *Beriberi*, and I have little doubt in my own mind, that the symptoms of Hemiplegia were occasioned by an effusion in the ventricles, or on the surface of the brain; but I regret that this was not ascertained by opening the head. I have myself before seen cases of *Beriberi*, when the effusion in the head was considerable, but none in which distinct symptoms of Hemiplegia occurred.

(Signed)

T. CHRISTIE.

C A S E VIII.

JOSEPH MORRIS, (ÆTAT. 23.)

October 22. Admitted last night with the usual symptoms of *Erdem*, and took a purging bolus, which operated well.

THE œdema of lower extremities is not quite so much this morning, and the pain and numbness attending is less, urine is high coloured and scanty. Pulse regular, but very slow.

Ungt. Merc. affricat. ʒi bis indies. Mist. tamarind.

Tinct. digitalis gt. X ter indies.

23. REMAINS much as yesterday, has made but little water.

Reptr. gtt. XV ter indies:

Alia ut heri.

24. REMAINS the same. The tincture has produced no immediate effect.

Adde gtt. X ter indies,

Alia ut antea.

26. THE drops have been increased to thirty: in this dose they caused dimness and giddiness, with some vomiting; he has made no urine. Mouth affected.

Contr. medic.

30. MOUTH not very sore: urine in abundance.

Contr. medic.

November 1. MAKES no complaint, the numbness in legs and thighs, and œdema having disappeared. Mouth is but slightly affected; he continues the use of half a paper of ointment; strength well and appetite; makes water freely, and appears well.

Reptr. Tinct. Digital.

Reptr. Merc.

Reptr. Brandy.

16. CONTINUES well, has had no stool the last forty-eight hours.

Pulv. Purgans.

17. HAS left off the mercury, well and equal to duty. Mouth well.

Contr. Med.

18. Discharged Cured.

*Extracted from the Case Book of the 51st Regiment at Candy,
in 1803.*

C A S E IX.

OWEN CALLAGHAN, His Majesty's 51st Regiment, (Ætat. 23.)
In Hospital at Candy, with a wound in the knee.

March 17, 1803. His wound is nearly healed, but, for two days past, he has complained of numbness and edema of the lower extremities. He took calomel and jalap this morning, which operated.

Capt. Pil. Cal. gr. ij. et Pil. Scillit. gr. iij 6ies. indies.
Punch. lbij.

20. His symptoms continue as before, and his belly is costive. Pulse, tongue, and skin, nearly natural.

Habt. Clysm. Lax. stat. et
Capt. Cal. et Extr. Colocynth. Comp. a gr. XV.
Contr. alia. u. a. prefer.
Vesperi repr. Clysma.

21. HAD only one stool from each of the glisters; mouth affected, edema and numbness diminished. Pulse 84 and regular; tongue moist; skin cool; no appetite.

Capt. Cal. et Extr. Coloc. 2 gr. v. ter indies.
Contr. Punch.

22. HE

22. He complains of numbness in his thighs, and oppression at the epigastrium, but there is no appearance of anasarca, and his pulse is good. Mouth sore ; urine natural ; belly still costive.

Habt. Clysm. Laxans stat.

Contr. Pil. bis indies et Punch.

26. Numbness and oppression relieved. Mouth and functions as formerly.

Capt. Cal. gr. ij bis indies

Rept. Clysma pro re nata, et contr. Punch.

30. His mouth continues gently sore, and he makes no complaint, but of numbness and partial paralysis of the lower extremities, which are not swelled. Belly very costive ; other functions natural.

Contr. Pil. Cal. bis indies et.

Rept. Clysma. p. r. n.

Utatr. Mist. Cort. Punch ; et

Affricr. artubus Linim. Volat.

April 1. On the marching of the 51st Regiment, for *Columbo*, this patient was transferred to Mr. HOLLOWAY, garrison surgeon of *Candy*, by

(Signed) T. CHRISTIE.

CALLAGHAN'S CASE continued from Mr. H's book.

April 2. *Beriberi* ; some dyspnoea and numbness ; of a very costive habit.

Pil. Cal. et Scil. 6ies indies.

4. Is relieved of dyspnoea, and better.

Rep. Pil. Two drams.

5. COMPLAINS much of debility. Oedema returned.

Repr.

Repr. Pil. Bark three papers. Two drams.

6. HAS been vomiting all night; has a quick hard pulse, and hot skin. His drams make him vomit, and he threw up his bark.

Pil. Cal. et Op. 6ies indies.

Bark, with 1 lb. of wine.

At five P. M. he had continued vomiting. Had, at three o'clock, one drachm of opium rubbed in, but without effect. Still continues to vomit.

Repr. Frictio statim. et repr. secundis horis.

Sumat Calom. gr. XX sing. horis.

1 lb. more wine.

7. HAD rubbed in four drachms of opium at four this morning, till when the vomiting did not stop. He has been quiet since, and is much better every way.

Repr. Cal. gr. X sing. horis.

The twenty grains were given, but not repeated.

Repr. Frictio. hor. tertiâ p. m.

Sextâ p. m. Rep. Frictio.

8. SLEPT better last night, but complains to-day of dyspnœa. Vomiting has ceased.

Repr. Pil. Cal. gr. X 3tijs. horis.

App. Empl. Vesic. sterno.

6 p. m. Rept. Frictio bis.

9. ALLOWS himself to-day, that he is better. Symptoms all relieved.

Repr. Frictio semel indies.

Repr. Pil. 5tis horis.

Bark three papers.

10. As yesterday, dyspnœa trifling.

Repr.

Repr. Empl. Veficat.

Rep. Frictio et Rep. Pil. 6tis horis.

Bark three papers.

11. Is purged to-day. Otherwise better.

Frict. Rep. Pil. Rep. 6tis horis. Pil. Opij cum. singulis.

Rep. Cort. Per. 3ij.

Six P. M. This man was suddenly seized with spasm, and died about half an hour since.

I ENTERTAINED great hopes of this man, after his vomiting was stopped, even to the last I saw of him, and was surprised to find that he had gone off so suddenly. He was a man of six feet high, and of an amazingly robust constitution. (Signed) H. H.

*Extract from Mr. H. HOLLOWAY'S Journal of the sick of the
51st Regiment at Candy.*

C A S E X.

SERJEANT BROWNE, His Majesty's 51st Regiment (Ætat. 35)

Candy, April 3, 1803. HAS, for some time past, had slight symptoms of *Beriberi*. Is, by habit, a man, I conceive, extremely liable to it. He however, complained but little, till the 2d, when he could not make his water free. I ordered him calomel and squills; but from his pressing duty, as hospital serjeant, at this time, he forgot to take them.

On Sunday the 3d, was taken at eleven A. M. with oppression at chest, and inability to stand.

Gutt. Sedativ. L.

Enema Lax. Empl. Vefic.

Cal. ppt. gr. V. 2dis. horis.

4. Is relieved of his dyspnœa, and feels stronger to-day.

Cal. gr. V. singulis horis.

Pil. Scil. gr. iij singulis horis.

Vin. ℥ij. Sago, Tea.

5. Is better every way this morning. Pulse good, spirits much revived.

Repr. Calom.

Pil. Scill. 6ies indies.

Wine ℥ij. Sago, Tea.

6. HAD last night a severe shivering fit, succeeded by profuse sweat. Is better now. Tongue white : pulse 90 ; skin cool and moist.

Repr. Calom.

Bark six papers, Wine ℥ij

7. VOMITED last night, which he attributes to his bark ; and complains of pain in the left side.

Repr. Cal. gr. v. singulis horis.

Pil. Scill. gr. iij 2dis horis.

Wine ℥ij.

6. P. M. HAS been attacked by fever again to-day, and is poorly to-night. Vomiting easier. Has had no stool.

Enema purgans.

8. GOT much ease from the glister. Appears much better to-day. No vomiting.

Repr. Calom. Wine ℥ij.

Repr. Enema.

9. MOUTH very sore. Little vomiting. No œdema.

Repr. Calom.

Pil. Opij 2dis horis. Wine ℥ij.

10. VOMITING much decreased. CEdema subsided. Mouth sore.

Rep. Calom. Empl. Vescic.

Pil. Opij. Bark three papers, Wine ℥ij.

11. Is as yesterday.

Cal. 2dis horis. Pil. Opij 3tiis horis.

Bark six papers. Wine \mathfrak{ss} .

12. PASSED a tolerable night, but has been hiccuping this half hour past, without ceasing.

Gutt. L. stat.

Pil. Cal. 2dis horis. Pil. Opij 3tijs. horis.

Repr. Cort. et Vin. \mathfrak{ss} .

HAS been relieved in the course of the day, of hiccup, but has it again just now; feels inclined to go to stool, but can pass nothing.

Enema purgans.

Tinct. Opij et sp. Ammon, C. \bar{a} gtt. L.

13. HAS passed a very good night, and is better this morning: got a stool from the glister: has no hiccup, or vomiting; mouth sore.

Cal. gr. v. 4tis horis.

Opij. gr i 4tis horis.

Rep. Cort. et Vin. \mathfrak{ss} .

Six p. m. as in the morning. Repr.

14. THE supercession of fever and flux upon the *Berberi*, appears to be so frequent, that although this man's mouth is exceedingly sore, and his limbs very much numbed, I recommended him for the convalescent hospital.

Repr. ut heri 5tis horis.

Repr. Cort. et Vin.

15. Cal. gr. \mathfrak{ij} . ter indies.

Pil. Opij 2tis horis.

Repr. Cort. et Vin.

16. Is pretty well, all but his mouth and debility.

Repr. ut heri vin. \mathfrak{ss} .

17. Rep. vin. \mathfrak{ss} . cum alijs med.

18. Rep.

13. Rep. Pil. ter inds. et opij 2dis horis.

Bark and Wine lbij. two drams.

Six p. m. Has been removed from the general hospital, to a convalescent one this morning. Feels himself rather better for moving.

Repr. Cort. et Vin.

AFTER such a report as is here, I was much surpris'd and mortified, to find that this man died in the night, from violent oppression.

(Signed) H. H.

No. 15.

Extract of a letter from THOMAS CHRISTIE, Esq. to W. HENDER, Esq. dated Columbo, December 8, 1803.

THE *Beriberi* has long been known by that name, amongst all classes of people throughout *Ceylon*; *Cingalese*, *Malabars*, *Moors*, *Portuguese*, and *Dutch*, but the word is originally *Cingalese*. *Beri*, I am informed in *Cingalese*, signifies sickness, and the word repeated in *Beriberi*, expresses bad sickness. I have conversed with a *Dutch* practitioner, on this subject, who has practised a few months in *Batavia*. He says, when there, he saw a few patients with a disease called *Beriberi*, (written and pronounced in the same way as on *Ceylon*,) but that it was chiefly a paralytic affection, without dropical symptoms; so that it appears probable, that the coincidence of name between this disease, and that described by BONTIUS, (whose account is adopted by SAUVAGES,) is merely accidental.

IN my last, when speaking of a deficiency of nutritious and stimulant aliment, from the parsimonious mode of living of the *sepoys* here, being the chief cause of the prevalence of the disease amongst them, I mentioned that government, at my suggestion, had granted, with a view to obviate this defect, a sum of money monthly to each *sepooy*, for the purpose of being laid out by their officers in the purchase

purchase of ghee, curry-stuff, &c. I am happy now to inform you, that this measure has completely answered the purpose intended, in improving the health of the *Ceylon* Native Infantry, and in particular, in diminishing the frequency, and preventing the prevalence of *Beriberi*. This corps is almost entirely composed of coast men, who were recruited at *Madras*, and arrived here in August or September 1802. They were employed in the *Canjian* campaign in the beginning of 1803, and like the other troops, suffered much from the nature of that service. *Beriberi*, in particular, became rather frequent amongst them in June and July, and from former experience of corps in similar circumstances, there was reason to apprehend that the disease would become extremely prevalent during the approaching North East monsoon, and at a time when the men had been subjected to the predisposing causes of *Beriberi*, for about twelve months; a combination which has seldom failed to occasion a very great frequency of *Beriberi*, amongst troops from the coast serving on *Ceylon*, as in the instance of the 6th Regiment of *Madras* Native Infantry in October, November, and December 1802.

THE measure recommended, of purchasing and issuing to each sepoy a proportion of ghee and curry stuff, took effect on the 1st of August, and on referring to the hospital returns of that corps, I find that in the month of July there were twenty-four cases of *Beriberi* in hospital, and six deaths from that disease. Since that month, contrary to what was to be apprehended, the number of cases of *Beriberi*, and of deaths from that disease has gradually diminished; and in November last, there were only twelve cases in hospital, and no death occurred from that cause.

MR. REYNOLDS, the surgeon of that corps, has treated a great proportion of his cases successfully, by means of the same remedies, which I have been accustomed to employ with *Europeans*, viz. purgatives, small doses of calomel and squills, so as to affect the mouth, and increase urine, nourishing diet, a moderate proportion of wine and spirits, frictions, exercise, and blisters; and strong stimulants where necessary. I enclose for your perusal, a case extracted from the hospital book of that gentleman, in which you will observe that the disease, in a severe degree, was in two different attacks, successfully combated, and removed by these means.

WHATEVER the pathology of *Beriberi*, or the theory of the application of mercury may be, I am well convinced that when judiciously employed, it is one of the most powerful and beneficial remedies in this disease, but I am also aware, that it must be employed with greater caution amongst natives, and that the irregular use or sudden subduction of that powerful stimulus, will often produce the most baneful effects. I have read the treatise of Doctor M'LEAN, to which you refer, and although his theory is perhaps on the whole extravagant, and his practice sometimes rash, I think there are many useful hints in his work, particularly on the use of mercury.

I have to thank you for Dr. DAVIDSON's observations on the *Cachexia Africana*, which I had not before seen. There is certainly an intimate connexion between the disease described by that gentleman, and the *Beriberi* of Ceylon, but he details several symptoms which we have never seen here, and which could not possibly have escaped our observations. The most remarkable of these, is *dirt eating*, to which I have never seen the smallest tendency, and induration of the mesenteric glands, which I have never remarked even after death, although the dissections on Ceylon, which I have been present at, or which have been reported to me, must amount to at least fifty. Numbness and torpor of the extremities is with us one of the most constant symptoms, but is not particularly mentioned by Dr. DAVIDSON.

WITH respect to his observation of benefit having been derived from living in low marshy situations, I can only observe, that our experience here has led us to draw an opposite conclusion, and induced us to set down moist air, and marsh miasmata as predisposing causes, and to consider a pure and dry atmosphere, as circumstances most conducive to recovery.

THE experience of Mr. ROSS on board the *Porcher*, though it shews that scurvy may succeed to, or be combined with *Beriberi*, (as is the case with many other diseases) I do not consider as at all a conclusive proof of the identity of the two diseases. The total absence of fetid breath, spongy gums, spots on the limbs, and tendency to hæmorrhage in *Beriberi*, demonstrates, I think, a very essential difference between that disease and scurvy; and the remark of Mr. ROSS, is in my opinion, more
than

than counterbalanced, by the instance of the 80th Regiment and *Madras European* Infantry at *Trincomalie*, in April 1797, when scurvy prevailed with the one corps, and *Beriberi* with the other, in consequence of the one regiment having been exposed to the climate, and bad living of *Trincomalie*, and the other to the want of accrescent vegetable matter during a long voyage from the *Cape*. The tendency to scurvy in the men of the 80th was soon removed by vegetables, and fresh meat, bad as it was, at *Trincomalie*, while the predisposition to *Beriberi*, did not make its appearance till the November following.

C A S E X I.

PEER AMOTII, Sepoy of His Majesty's *Ceylon* Regiment, (*Ætat.* 24.) a native of the *Coromandel* coast.

This man was admitted into hospital the 27th July 1803.

B E R I B E R I.

SAYS, he felt pain and numbness in his limbs, with general lassitude, for some days past, but did not observe any swelling before the 23d, when his appetite got bad, and his strength failed him: his face and belly considerably swelled, breathing slightly affected; has been cosive for some time past, and does not recollect having had a stool for these five last days, urine high coloured and passed in small quantities; complains of great thirst; pulse small, but quick; tongue white; skin cooler than natural. This man has been lately on command in the *Candian* country, where he had nothing but rice and paddy issued to him for three weeks.

Appr. Empl. vesic. stern.

R calomel ppt. gr. viij.

Extr. colocinth. C. gr. X.

Ol. menth. pip. gtt. ij.

M. ft. bol. statim. sumend.

R pulv. jalap.

Cremor. tartar aa ʒj M.

To be taken two hours after the bolus. Bibt. Decoct. Oryz.

Liniment:

Liniment. sapon. et spt. terebinth. aa ʒvj. ft. liniment.

His legs and thighs to be well rubbed with this liniment frequently in the course of the day.

28. THE bolus and powder purged him freely, says he feels much easier since: swelling not increased, thirst somewhat abated, rested tolerably well, and I think his countenance is better than yesterday. Blister rose well.

℞ calomel gr. ij.

Pulv. scillæ gr. i.

Ol. menth. pip. gtt. i.

Sapon. venet. q. s. ft. pill. sumat unam ter quaterve indies.

Spirits and water made weak for his common drink; to have beef soup with barley whenever he calls for it.

Repr. liniment.

29. RESTED tolerably well, made water more freely than usual, but had no stool since the 27th, the swelling in his limbs appears to diminish a little, and his countenance is certainly improved: thirst not quite so great, breathing easier.

℞ calomel gr. viij.

Extr. cathart gr. v.

Ol. menth. gtt. ij. M ft. bolus statim sumend.

℞ pulv. jalap.

Crem. tart. āā ʒi. M.

To be taken two hours after the bolus, and to commence taking the calomel and squills as soon as the bolus has ceased to operate. Contr. alia.

30. THE bolus and powder purged him six times yesterday morning, which has done him much good: the swelling in his belly and face appears to diminish: has made water freely; he has taken three pills yesterday, complains of a disagreeable taste in his mouth this morning, the mercury begins to affect him, breathing quite easy.

Repr. pilul. et liniment. Continue his soup and drink as formerly.

31. RESTED

31. RESTED well, and says he feels better in every respect, except his mouth, which is slightly affected; had two copious stools early this morning; pulse improved, swelling evidently decreased, urine not so high coloured: countenance and spirits good.

Repetr. omnia ut solit.

August 1. RESTED well, but complains a good deal of his mouth, which is sore, spits a little; the swelling and numbness of his limbs decrease daily; had no stools since yesterday.

Capt. pulv. jalap C. ʒi. statim.

Capt. pilul. duas indies et Contr. alia.

2. THE powder purged him four times, and he says he always feels better after it, mouth very sore. Reptr. pilul. duæ.

3. No swelling at present in his face, his limbs nearly the natural size. Belly still swelled a good deal.

Rept. pilul.

4. No material alteration since yesterday; makes little or no complaint, except his mouth, which is so sore, that it prevents his eating; his appetite begins to return.

Reptr. pilul.

Capt. Vin. ʒss.

5. DOING well.

Reptr. pilul. et Vin. ʒss.

6. HAS had no stool yesterday, and says he feels rather worse. He regularly asks for a purge every day, a very unusual circumstance with a native, as it is with no small degree of difficulty I can prevail on them to take medicine.

Capt. pulv. jalap C. ʒij. et

Reptr. alia.

7. WAS purged freely, and says he feels much better this morning; the swelling in his belly appears to decrease; mouth not quite so sore.

Reptr. pilul.

8. DOING well.

9. His mouth is so much better, that he is able to walk out and take exercise, morning and evening, when the weather will permit. I must here observe, that I regularly made him walk up and down the hospital, which is long, three or four times a day, as long as his strength allowed; at first he was so weak, that he was obliged to be supported by two men, but yet I found that he always derived some benefit from being moved about.

10. CONTINUES to recover his strength daily: his appetite much improved.

Reptr. ut solit.

11. HE still complains of costiveness.

Reptr. pulv. ut antea.

Capt. pill. ut solit.

Contr. alia.

12. WAS purged freely: mouth still sore.

Reptr. pilul. et Contr. alia.

13. HE takes a great deal of exercise: the swelling in his belly decreased, and doing well in other respects.

Capt. Pilul. i indies. Contr. alia.

14. DOING well.

Reptr. ut heri.

15. BELLY regular, and very little swelling remains at present.

16. CONVALESCENT.

17. HE has asked to be discharged from the hospital, but he is not strong enough yet.

18. DOING well.

19. HAS no complaint.

25. HE has repeated his request to be discharged.

26. DISCHARGED,

25. DISCHARGED, but he is not to be sent on detachment, or employed on any hard duty, for one month if possible.

September 7. This man could not have the indulgence I wished, as the regiment are much harraſſ'd with detachments, and the garrison duty is very severe; he returned this morning to the hospital with his belly swelled, his limbs a little numb'd, but not much swelled; has had no stool for three days, countenance bloated, pulse small, tongue white, appetite impaired, complains of stiffness in his limbs and general lassitude.

Reptr. Calomel gr. X.

Extr. Cathart. gr. vj.

Ol. menth. gtt. ij M. ft. bol. statim sumend.

Pulv. Jalap. C. ʒij. To be taken two hours after the bolus.

Spt. Terebinth. et Liniment. sapon. aa ʒiij. — His legs and thighs to be well rubbed with this liniment frequently in the course of the day, and he is to take as much exercise as possible.

8. HAD several copious stools after taking his medicine, and in the evening walked about a mile: says he feels much better this morning. Ordered to walk out immediately, and begin taking his squills and bolus as formerly.

Reptr. liniment. Spirits and water as formerly:

9. HE has taken a great deal of exercise yesterday; countenance not so bloated; says he feels somewhat better.

Contr. omnia et Vin. ʒss.

10. HE has taken four pills yesterday; the swelling in his limbs rather decreased, has had no stools since the 8th.

Repetr. Bol.

Reptr. Pulv. Jalap. et Contr. alia.

11. WAS purged freely; and appears much better. Countenance improved.

Reptr. omnia;

12. THE

12. THE swelling and numbness in his limbs diminished, and doing well in other respects.

Reptr. omnia.

13. Continues to get better, makes no complaints, except his mouth, which begins to be slightly affected.

Contr. omnia.

14. His appetite begins to return, and doing well in every respect to take only three pills to-day.

Contr. alia.

15. HE has had no stool for two days.

Reptr. Bol. cum. Pulv. Jalap C. ut antea.

Contr. alia.

16. WAS purged freely, and feels much better to day than yesterday : mouth sore.

Capt. Pill. duas indies. Reptr. alia.

17. DOING well.

Contr. Medicament,

18. THE swelling in his belly considerably diminished, has no numbness or swelling in his limbs ; mouth not quite so sore.

Reptr. omnia.

19. DOING well.

20. DITTO.

21. CONVALESCENT.

24. RECOVERING fast.

Capt. Pilul. i indies.

26. MAKES no complaint, appetite good, takes a great deal of exercise.

30. HE

30. He appears quite recovered.

October 1. Discharged cured; but recommended for easy duty for one month.

(No. 16.)

Extract of a letter from W. COLHOUN, Esq. Surgeon of the 5th Regiment Native Infantry Madras Establishment, to W. HUNTER, Esq. Marine Surgeon, Bengal; dated Nundydroog, 18th February, 1804.

I HAVE not a doubt on my mind with respect to the good effects resulting from a nourishing diet and general tonic plan in obviating the fatal tendency of *Beriberi*, and I am firmly convinced that the use of regular exercise is the most effectual mean of preventing the paralytic symptoms (though it may be proper to mention, that an instance or two occurred where the patient dropt down and died while walking out under a guard, which was the only mode in which this part of the cure could be carried into effect), but I am to this moment at a loss with respect to the best mode of obviating the dropical symptoms, or how far the means most calculated for their removal are compatible with the general plan of cure.

WHERE the disease is treated after removal from the particular atmosphere which produced it, I have no doubt that the dropical symptoms will be found in general easily and safely removeable by various methods. It was after change of climate, and in the case of *Europeans*, that the sudorific plan, urged as described in my first letter to Mr. CHRISTIE, was attended with such striking success. Where this plan is to be pursued, I should imagine (in the case of *sepoys* especially) it might be done better by means of a heated room than in any other manner, but my trials in this do not enable me to speak with the confidence of experience.

PURGATIVES and emetics I have observed to have very speedy effects in removing or reducing the dropical symptoms, and I have perhaps been too often in consequence tempted to adopt their use, but, however flattering their temporary effects, the repetition of such remedies, in the frequent

relapses that occur of these symptoms where the climate is not changed, cannot but be considered as very objectionable, particularly as even the most speedy disappearance of the dropical symptoms, is by no means to be depended on as an earnest of a favorable issue to the disease, nor the absence of dropsy as a security against its dangers.

OF diuretics, there is one, of which I am inclined to think very favorably, as a remedy to be used for the indication in question, viz. a solution of nitre in distilled vinegar, in the proportion of ʒij. of the former to ʒi. of the latter. In the last six weeks, or two months, of my practice in *Beriberi*, (for I did not commence its use sooner) I prescribed in many cases from ʒss to ʒi, of this solution, three or four times, or oftener daily, and the swellings in general subside quickly under its use.

WITH respect to other remedies for *Beriberi*, of which I made trial, I have nothing particular to add: my experience has not served to confirm that degree of efficacy, which on other occasions has appeared to attend the use of calomel and squills, as remedies of *Beriberi*, and I cannot say that the effects of the nitric and citric acids have proved equal to the expectations I once formed of them, but my practice was certainly in a situation particularly unfavorable to the recovery of my patients, viz. where *Beriberi* was endemic to a very uncommon extent.

ENCLOSURES IN THE ABOVE.

(A)

*Extract of a letter from Mr. COLHOUN, to Major GRAY,
Commanding the 2d Battalion 6th Regiment Native Infantry;
dated Columbo, November 1800.*

THE following two facts prove that the removal of either of the circumstances which I have alleged to be of principal influence in the production of *Beriberi* (viz. want of sufficient and wholesome nourishment, and the breathing of air deficient in oxygen) will in itself go a great way towards removing the disease.

A PARTY of men affected with *Beriberi*, were sent from *Trincmalis* to *Jaffnapatam*, while I was surgeon of that garrison. On their arrival, few
of

of them had any symptom of the disease remaining. The breathing of a purer air must have produced recovery in this case, as the diet of these men was not bettered till they reached *Jaffur*. That proper regimen without change of situation contributes much to the cure of *Beriberi*, may be concluded from the very great success of Mr. CHRISTIE's practice at *Trincomalee*, amongst *Europeans*, who in hospital, are allowed every possible comfort.

(B)

Extract of a letter from Mr. COLHOUN, to TH. A. RHEEDER, Esq. Superintendent of Hospitals on Ceylon; dated Columbo, April 1, 1801.

In some of the most violent attacks of *Beriberi*, in which the limbs became suddenly paralytic, I have remarked immediate good effects from frictions, so that, chiefly I think owing to their use, a patient has been enabled to walk out, who had been carried into the hospital two or three days before.

From all the experience I have had in the treatment of *Beriberi*, I am fully confirmed in opinion that the proper use of frictions, exercise, nourishing diet, and a strengthening course of medicines, regularly administered, with occasional prescriptions for the dropical symptoms, will in most cases prove adequate to the cure of this, or at least ward off the distressing symptoms during the sickly season; and that it will thus be found as certainly (though tediously) curable as it has in general been fatal, amongst *sepoys*, and, I believe, except where the chief of the above means have been used, amongst *Europeans* also.

THAT this plan has been very useful, we may conclude from experience, since of ninety men admitted with this complaint after the removal of the sick to the *Galle* force, previous to which they were never exercised with tolerable regularity, only one has terminated in any considerable loss of the power of motion, and only four in death, one of whom had the small pox added to *Beriberi*. Almost all the remainder are either in a fair way of recovery, or already recovered.—Now though there is a possibility that

in the case of the men last attacked, the circumstance of their having a season possibly less sickly, and, for a shorter time, to struggle with, may have had an influence in rendering the disease milder, I attribute much more to the means of cure employed; because their effects, particularly that of exercise, were very striking, even when the attacks of the disease were most frequent, in checking the paralytic tendency. Besides, it has appeared, from some very late attacks of *Beriberi*, that the action of its causes has continued considerable; and even in a late instance, which is included in the number of fatal cases in the above statement, a case has occurred, of more rapid progress than almost any other during the season. This patient had been some time in the hospital for the itch. A swelling of the face was observed on the 18th ultimo, and he complained of numbness in his legs. The day afterwards he became paralytic, and the next morning his pulse was scarce perceptible, and he died that forenoon.

THIS, and several other cases, have proved to me, that the season, even lately, was capable of producing violent attacks of *Beriberi*, and of quick progress; which, I think, have been prevented from proceeding, chiefly by the more regular use of exercise. Had the disease followed latterly any thing like its course early in the season, a very great proportion of the men, attacked in February, must have been by this time paralytic, which is not the case, even in those attacked early in January.

UPON the whole, from all the experience I have in the management of *Beriberi*, I am led to think, that the means of cure I have attempted, though not followed by complete success, have yet done essential service; and the same plan, pursued with regularity, will seldom fail to obviate the tendency of this disease to palsy and death, unless in cases of uncommon violence, or where there exists a complication with some other disorder*.

* I consider immediate change of climate, however, as the best means that can be used for the removal of *Beriberi*, when it can be carried into effect, without being attended with circumstances particularly unfavorable, as was the case with the men of the 2d of the 6th sent from *Columbo* to the coast.

I have had little opportunity of making observations on *Beriberi* since the above letter was written.

(No. 17.)

*Extract of a letter from Mr. COLHOUN to Mr. HUNTER, dated
Camp forty Miles from Seringapatam, 3d April, 1804.*

IN answer to your question respecting the quantity of lime juice which I used as a remedy for *Beriberi*, I cannot at present refer to my notes or quote particular cases, but I perfectly recollect having given six, eight, and ten ounces daily; and upon the whole, there are few medical facts of which I am more convinced, than that in such an endemic as fell under my observation, at *Columbo*, any practitioner will be most miserably disappointed who rests his hopes of cure on the citric acid, or any remedy in the *Materia Medica* that I made trial of.

HAVING kept no notes to assist my memory, I cannot be particular in detailing the circumstances attending the removal of the men affected with *Beriberi* from *Trincomalie* to *Jaffnapatam*, while I was surgeon of that garrison; but I can in part supply the want of particular information, in my statement of that fact, by informing you, that the party came by sea, had no medicines, and were victualled very indifferently during the voyage. The number, however, that had symptoms of *Beriberi* at the time of their leaving *Trincomalie*, was but small. I cannot specify exactly, having had no account of their cases from the surgeon who attended the corps at *Trincomalie*, but, from the information of the patients themselves, and of their commanding officer, there was not a doubt that several of them had quitted *Trincomalie* with swelled legs, who reached *Jaffnapatam* (or rather *Point Pedro* in its neighbourhood the northern point of *Ceylon*) free from any symptom of the complaint.

For my own part, I have not the shadow of a doubt, that change of situation is incomparably the most powerful means, that can be used, for obviating the fatality of *Beriberi*, whenever it occurs as an endemic. Indeed, from the statements I have heard in proof of this fact, I consider it as a certain result of experience; and in the 2d of the 6th, I have reason to believe, that the year before I joined it, there was perhaps not one instance of perfect recovery from *Beriberi*, unless in cases of men who were sent to the coast, while in those who were sent, the result was generally favorable.

APPENDIX No. XI.

SCURVY being a disease which most frequently occurs on board of ships, on long voyages, where salted provisions necessarily constitute a principal article of diet; this kind of food was soon considered as the chief cause of the disorder. Doctor CULLEN, whose judgment, on most points of medical doctrine, has deservedly great weight, was doubtful whether scurvy ever appeared without the use of such aliment. But since his time, a numerous collection of facts has evinced, that deficiency of nourishing food, of easy digestion, and especially of recent vegetable matter, will produce the disease, even where no salted meat, nor indeed any animal substance whatever, has been used.

FIRST, that the salt in the provisions is a cause of scurvy, is rendered improbable, by this consideration, that the drinking of salt water has been recommended to scorbutic patients, and was not found to aggravate the disease (1). The stimulus of salt on the stomach assists digestion, and must therefore be salutary, rather than hurtful (2).

SECONDLY; seamen have been known to live for three years, on salt provisions, without being seized with scurvy (3).

THIRDLY, this disease has appeared, in numerous instances, where no salted provisions were used.

THUS Doctor MILMAN, after adducing very convincing arguments to prove that the disease which afflicted the *Roman* army under ÆLIUS GALLUS was scurvy, shews that they used no salt provisions (4).

THE pathetic narrative, given by JOINVILLE, an eye witness and fellow sufferer, of the sickness under which the army of ST. LOUIS laboured in *Egypt*, clearly indicates scurvy. No salted provisions were eaten. In both these cases, the sources of disease were great fatigue, want of nourishment, bad air, and scarcity of water (5).

THE imperial armies in *Hungary*, according to KRAMER, suffered

(1) BLANZ on diseases of seamen, p. 289.

(2) Ibid.

(3) LIND on scurvy, p. 51, 3d Editn.

(4) MILMAN on scurvy and putrid fevers, p. 1816

(5) Ibid, p. 184.

severely by this disease, although they eat no salted meat. The causes assigned by that author are moisture of the air and soil, with indigestible food, chiefly consisting of a heavy pudding, called *Rollatschen*. The *Bobentians* especially lived on this kind of aliment, and to them the scurvy was almost entirely confined (6).

The causes to which NITSEN ascribes the scurvy in the *Russian* armies, are cold with moisture; bad nourishment, consisting of fish ill dressed; and bread not sufficiently baked; bad water, preceding disease, excessive fatigue and depressing passions. They had no salt provisions (7).

LORD ANSON's ships, on leaving the coast of *Mexico*, were seized again with scurvy, which had disappeared during their stay in port. The causes of relapse, in this case, are by no means obvious. They had plenty of fresh meat on board, and daily caught abundance of fish. They had a full allowance of water, and great pains were taken to keep the ship clean and airy. To the dampness of the atmosphere, the season being very rainy, and the want of recent vegetables, together with their previously acquired predisposition, we must attribute the relapse of the crew (8).

SOME poor *Italians*, in the neighbourhood of the *Alps*, lived on the decoctions of a few roots, and often passed whole days without food. In consequence of such scanty fare, they were seized with scurvy (9). DOCTOR MILMAN considers the causes, in this instance, to be defect of nourishment with cold, and adds that in the warmer climate of *Naples*, the same scarcity brought on putrid fever. DOCTOR TROTTER explains in another way the different effects in these two cases, alleging, that vegetation being destroyed in the bleak region of the *Alps*, the inhabitants were deprived of oleraceous herbs, which those at *Naples* could procure (10). But the little nourishment placed within the reach of the natives, in the former case, being of a recent vegetable nature, this reasoning does not appear to be well applied.

(6) LIND on scurvy, p. 49, 411.

(7) Ibid, p. 49, 431.

(8) LIND on scurvy, p. 49, 67, 445.

(9) MILMAN, p. 24.

(10) Observations on scurvy, p. 117.

DOCTOR GRAINGER gives two instances of most violent scurvy, occurring among fishermen on the coast of *Fife Shire*. These cannot be supposed to have lived on salt provisions, and probably had plenty of fresh fish. The causes seem to have been excessive fatigue and rainy weather in a moist situation (11).

THE effect of this last cause, according to DOCTOR LIND, was strongly exemplified on board the *Salisbury*, which had made several long cruises without the appearance of scurvy. Yet, in two instances, it broke out with violence, after being only a month or six weeks at sea. In these two cases, the weather was cold and rainy; the only circumstance in which they differed from former cruises (12).

DOCTOR DONALD MONRO, relates a case of scurvy, occurring without any change in the diet to which the patient had been accustomed. He had, particularly, every day, fresh meat and vegetables. The only alteration which had taken place in his mode of life, was the removal, from country air, to that of the town; and, probably, a more sedentary occupation (13).

DOCTOR MILMAN gives the cases of two women, labouring under a high degree of scurvy, after living for several months, on an infusion of tea, with no other addition than plain bread. (14) Here was defect of nourishment in general, and of recent vegetables in particular. Two cases somewhat similar to these may be seen in medical commentaries, XIII, 320, and XIV, 292.

DOCTOR TROTTER says, scurvy is a very common complaint, “ in the country ships, in the *East Indies*, where the religion of the natives obliges them to live at sea on rice.” (15) The foregoing reports confirm the truth of his first assertion, but shew the latter part to be inaccurate, as a considerable article, in the food of those people, is salted fish, often tending towards putrefaction:

THE same physician describes a most virulent scurvy, which prevailed

(11) LIND on scurvy, p. 124.

(12) LIND on scurvy, page 52, 63.

(13) Medical transactions, Vol. II, page 326.

(14) Ibid. page 471.

(15) Observations on scurvy, page 38.

on board a Guinea ship, among the slaves; whose " food consisted of
 " beans, which were brought from *England*, and rice, and *Indian* corn,
 " which were bought on the coast. These articles were boiled to the
 " consistence of a soft paste; and made as near as possible like the food
 " of the country, by the addition of palm oil, guinea-pepper, and com-
 " mon salt." (16) Here was no animal food, and the diet, had other
 circumstances been favorable, might have proved salutary. But those
 wretches were entirely debarred the use of exercise, and crammed into a
 place where they had neither room to move, nor air to breathe.

To these instances of scurvy occurring without the use of salt provisions,
 I can add one, which fell under my own observation, among the *Bengal*
sipahes in the *Carnatic*, in the years 1783 and 1784. The troops, being
 then twelve months in arrears, were in great distress for money. They
 had an allowance of rice from Government: but every other article of
 provision was at a price, almost, if not entirely, beyond their reach; and
 many articles of condiment, to which the native troops are accustomed,
 in their own country, could not be procured, at any rate. The season also,
 was remarkably cold and wet. Under these circumstances, many were
 attacked with scurvy. I add two of the cases.

TRIPALMADORE, March 18, 1784. IMAMBEE, a *sipahce*, aged thir-
 ty-five, has a swelling of his right leg, attended with pain and rigidity,
 reaching from the ankle to the apophysis of the *Tibia*, and occupying all
 the muscles in those parts, especially on the back of the leg. The knee
 joint is free from complaint. His gums are livid, and detached from the
 enamel; and the teeth loose. His breath is foetid, and blood is discharged
 from his gums, on washing them. Respiration difficult on taking exer-
 cise. Appetite bad. Thirst great; pulse about eighty, small; belly na-
 tural.

His complaints are of a month's standing, and began with the affection
 of his leg, which swelled to a great degree, but is since considerably re-
 duced.

THE pain in his leg is the same by day and night.

He was ordered to take thirty drops of elixir of vitriol every morning, and to swallow, at the same time, a table spoonful of mustard seed: to use, in his food, plenty of garlic, and the root of *Merunga*, (*Guilandina Moringa*, LIN. *Hyperanthera Moringa*, WILLD.;) to have his leg fomented with a decoction of the leaves of *Neem* (*Melia Azadirachta*, LIN.) and afterwards to be wrapped up in a cataplasm of the same.

29. THE swelling of his leg reduced; the pain less, and he can now walk with much greater ease. His breathing is less affected by exercise. His gums are firmer, more florid in colour, and less apt to bleed.

He was sent into the hospital at *Madras*, the detachment being about to march for *Bengal*.

March 22. SHEKH HURAR, sipahee, has a swelling and hardness of both legs, attended with rigidity in the tendons that form the hamstrings, and with considerable pain. His gums and breathing affected as in the last case.

THE same medicines, regimen, and external applications were prescribed as in the former; and on the 29th, he was sent into *Madras*, much relieved. In particular, he could now walk with considerable ease, though, when first admitted, he could not even stand;

APPENDIX No. XII.

On dropsies preceded by acute diseases, HIPPOCRATES delivers his sentiments in the following passages.

“ THE dropsies which arise from acute diseases are all bad. For they do not remove the fever, they excite violent pain, and are mortal (1).”

“ THE dropsies which begin from acute diseases, bring trouble and destruction (2).”

“ ALL these diseases,” (he was speaking of dropsies) “ soon become dangerous, and increase quickly. But they become much more severe, if the body has fallen into them, after being wasted by any other means. If therefore, the disease has seized a man suddenly, he dies; because the original distemper is already of long standing. And, if the belly also be soluble, he dies very quickly, preserving his senses and speech to the last (3).”

“ HE who has had a profuse discharge of blood, upwards and downwards, succeeded by fever, is in great danger of a dropfy, the most rapid of all in its progress, and from which it is most difficult to recover (4).”

“ WHEN a disease of the spleen, or of the liver, a Leucophlegmatia or dysentery, terminates in a dropfy, it must be treated with the same remedies (as before recommended); but, it must be considered that, in such cases, few recover. For, when one disease succeeds another, it generally proves fatal; because the body, being weakened by the present disease, if another

(1) Οἱ δὲ ὕδρωπες, οἱ ἐκ τῶν ὀξείων νοσημάτων πάντες κακοί. Οὔτε γὰρ τῷ πυρὶ ἀπαλλάσσουσιν. ἐπάδυναι τε εἰς κάρτα καὶ θανάτους. Hippoc. Prænot. page 39, Ed. Fœs.

(2) Οἱ δὲ ὕδρωπες οἱ ἐκ τῶν ὀξείων νοσημάτων, ἐπίκουσι γένεσθαι καὶ ἀλῆθις. Coac. Prenot. page 190.

(3) Γίνεσθαι δὲ τὰ νοσήματα πάντα ταχέως κακὰ. καὶ πάντα αὐξάνει ταχέως. Ἡ δὲ κακώτατος γίνεσθαι, ἣν ἐκ ἐτέρας νόσου τὸ σῶμα τιγῆδεν, ἐς τοῦτο περιέλθῃ. ἣν μὲν οὖν ἐν τάχει προκαταλάβηται τὸ νόσημα τοῦ ἀνδραποῦ, θνήσκει, αἷε τῆς νόσου χρονιολέλης γενομένης. ἐπὶ δὲ καὶ ἡ κοιλία εὐροῖ γενέσθαι, καὶ θνήσκει ταχέως, ἐπὶ αὖτε καὶ διαλεγόμενος. De Morbis, Lib. IV, p. 515.

(4) Ὡ δὲ αἰμορρῶγῃ πολλὸν ἄναι, καὶ κίλι, καὶ πυρετος ἐπιγένηται, ὕδατος ἐμπλησθῆναι πολλὰς διπλῆς τοῦτον, καὶ τῶν ὕδρωπων, οὗς ἀνιχνεύουσιν, τε, καὶ ἐν τοῖσι ἀφροκείσιν. Predict. Lib. II, page 89.

be superadded, is destroyed by debility, before the disease which last attacked, can run its course (5).

(5) Ὅταν δὲ ἀπὸ σιληνίου, ἢ ἡπατος, ἢ λευκοστομάτου, ἢ δυσουρίας ἐκ ὁράτων μετασῶ, ἀρμύνηται τοῖσι αὐτοῖσι ξημώθει, διαφύγουσι δὲ οὐ μάλα. τὰν γὰρ νοσημάτων ἐπὶ αὐτοῖσι ὁρᾶται γίνεσθαι, αἱ τὰ πολλὰ ἀποκλείναι. ὅταν γὰρ ἀσθενῇ τὴν σάρκα οὐκ ὑπὸ τῆς παρούσης νόσου, ἕτερον νόσον ἀποκλείει, προεπύλλουσι ὑποἀσθενείᾳ, πρὶν ἢ τὴν ἑτέραν νόσον, τὴν ἐξῆς γινόμενὴν, τελευτήσῃ. De Affectionibus, page 522.

APPENDIX No. XIII.

GREAT difference of opinion having prevailed among physicians, respecting the efficacy of the mineral acids in the prevention and cure of scurvy, a short, connected view of their sentiments may not be unacceptable to the reader.

DOCTOR LIND (on scurvy, p. 142,) says, the muriatic acid was recommended by GLAUBER (*Consolatio Navigantium, &c.*), and by BOERHAAVE. But, in VAN SWIETEN's commentaries on his aphorisms, I can find no mention of it as an internal medicine. It is merely prescribed as a topical application to the putrid gums.

SENNERTUS (LIND 342,) enumerates it in a long list of what he calls cooling antiscorbutics; most of which are acids, either vegetable or fossil.

SYLVIVS DE LE BOE says, it is serviceable, as well as the juices of oranges, lemon, &c. But it is remarkable, that he also recommends the use of volatile salts, from animal substances, in the same disease. LIND page 375.

DOCTOR ADDINGTON, in an essay published in 1753, recommends for the cure twenty drops of Sp. Sal. marin. every day, with daily gentle purgation, with sea water. And he says, about an ounce and a half Sp. Sal. to a tun of water, will preserve it from corruption. (*Ibid.* page 459).

BUT DOCTOR HULME (*ibid.* p. 488) says, that neither the tincture of bark and myrrh in brandy, with the addition of camphor, saffron and cream of tartar, the elixir of vitriol, nor the spirit of sulphur, or of sea-salt, though joined with the bark, were equal to the virtues of the orange and lemon-juice.

DOCTOR LIND says (p. 145,) " spirit of sea-salt, elixir of vitriol, and
" vinegar, were deemed proper antidotes to the rank and putrid state of
" sea provisions, and water; and perhaps to the putrescent state of the hu-
" mours, in this disease. But whatever good effect, for the last purposes,
" these may be supposed to have had, in a smaller degree, yet experience
" has abundantly shewn, that they have not been sufficient to prevent this
" disease; much less to cure it."

In the six comparative trials made by Doctor LIND (p. 149-154), to ascertain the most efficacious medicine, the elixir of vitriol, taken to the extent of twenty-five drops, three times a-day, had no good effects. The muriatic acid was not tried.

In page 157, he says, " Some might naturally conclude, that these
" fruits (oranges, lemons, &c.) are but so many acids, for which tamar-
" inds, vinegar, Sp. Salis. ill. vitriol, and others of the same cl. f.,
" would prove excellent succedanea. But, upon bringing this to the test
" of experience, we find the contrary. Few ships have ever been in
" want of vinegar, and, for many years before the end of the late war,
" all were supplied sufficiently with el. vitriol. Notwithstanding which,
" the channel fleet often put on shore a thousand men, terribly afflicted
" with this disease, besides some hundreds who died in their cruises.
" Upon these occasions, tar-water, salt-water, vinegar and el. vitriol,
" with many other things have been abundantly tried to no purpose:
" whereas there is not an instance of a ship's crew being ever afflicted
" with this disease, where the before-mentioned fruits were properly,
" duly, and in sufficient quantity administered."

HERE it is to be observed, that although the author mentions the Sp. Salis. and tamarinds, he does not say that either of them had been tried, on the occasions alluded to.

THE same author (on preserving the health of seamen, p. 37.) says
" it has hitherto been the aim of those, who have made marine diseases
" their study, to find out a proper agreeable acid, which sailors might
" be induced to use, as the best preservative against many of their
" diseases. Vinegar, spirit of salt, elixir of vitriol, and many others, have
" been severally recommended, and have been experienced, under proper
" circumstances, to have produced good effects. Cream of tartar has
" the advantage, not only of being much more palatable than any of
" these acids, and, according to the sentiments of Doctor BOERHAAVE,
" and my own experience, beneficial, and well adapted to the constitu-
" tion of mariners; but is also the cheapest acid that can be recom-
" mended for the purpose."

DOCTOR CULLEN (§ 1807) says " it has been common, in this
" disease, to employ the fossile acids; but there is reason to doubt if they
" be

“ be of any service, and it is certain they are not effectual remedies.
 “ They can hardly be thrown in, in such quantity as to be useful anti-
 “ septic; and as they do not seem to enter into the composition of the
 “ animal fluids, and probably pass off unchanged by the excretions, so they
 “ can do little in changing the state of the fluids”.

THIS idea, that the fossil acids, even when taken into the circulation, are neither decomposed nor intimately combined with the animal fluids, is repeated by the same author, in his *Materia Medica*, vol. I, page 228, II, page 327-412.

DOCTOR TROTTER also says, “ the nitric and sulphuric acids, in
 “ whatever manner exhibited, pass through the body pure and unaltered,
 “ as when taken into the stomach.” (*Observations on scurvy*, page 146-184).

BUT DOCTOR BEDDOES, on the other hand, alleges, that the mineral acids are decomposed by almost all animal and vegetable substances. He remarks that persons, taking the vitriolic acid, smell faintly of sulphur; and that this acid is the best remedy we possess in herpes, a disease which he thinks analogous to scurvy, and approaching it by a number of intermediate shades. For these reasons he thinks a full trial should be made of those acids in scurvy.

A SIMPLE inspection of the best tables of affinities favours the opinion of Dr. Beddoes, respecting the decomposition of the sulphuric and nitric acids, by animal and vegetable substances; for both carbon and hydrogen more strongly attract oxygen than sulphur and azot do. And the successful application of the nitric acid, by Mr. SCOTT, to the cure of the same disease, in which the good effects of mercury are most conspicuous, leave no doubt of the fact, as far as that acid is concerned, in the minds of those who admit oxygenation as the principle on which those cures are effected. With regard to scurvy, in particular, that ingenious practitioner recommended to Admiral RAINIER, a trial of this medicine on board of his ships. And the successful result of this experiment appears by the reports of two surgeons in the fleet. A collection of cases, treated by those gentlemen, which establish the efficacy of this acid, was transmitted by Mr. SCOTT to Dr. BEDDOES.

BUT the muriatic radical, according to LAVOISIER, (p. 257, 2d edit.)
 has

has so strong an affinity for oxygen, “ that it has not hitherto been decomposed by art, perhaps even not by nature.” And this proposition still appears to be true, notwithstanding the supposed discovery of GUTTANNER (see THOMPSON’S Chemistry, vol. II. p. 59.)

YET that even this acid may be successfully employed for the prevention and cure of scurvy, will appear from the following narrative, for which I am indebted to the friendly communication of Mr. BROWN, who went, as surgeon of the ships *Britannia* and *Speedy*, on whaling voyages round the world. The use of it in all putrid cases, was pointed out to him, by the late Sir WILLIAM FORDYCE; and Mr. BROWN had first occasion to experience its effects, in a putrid fever, on a voyage to *New South Wales*, with 150 convicts, besides mariners and the ship’s crew. He says “ we had not passed the bay of *Biscay*, when a putrid fever made its appearance, and raged with a pestilential fury. It was under God, owing to this admirable medicine, that we only lost one man, and he “ was at the age of seventy-four.”

As a preventative of the scurvy, he advises to mix a spoonful of the acid in a hoghead of water, and give it as common drink. “ Its taste is imperceptible, and it will not only keep the water sweet and wholesome, but will refresh the blood, and prevent that disposition to putrefaction, which is the invariable attendant of a long continuance in the sea air. Notwithstanding this preventative, should symptoms of the scurvy appear, its use must be varied, and stronger. To a quart of spruce beer, or the same quantity of treacle and water, add forty-six drops of the acid. Shake them well together, and give a tea cupful every six hours. On the second or third day, the purple spots will begin to assume a light yellow colour, and in less than five more, they will disappear. If a ship is fortunate enough to have essence of malt on board, the same quantity of acid, mixed in a quart of wort, three times stronger than what is ordered by the printed directions, is greatly preferable to the molasses and water, or the spruce beer, and will very much hasten the cure. It ought not to be concealed, that, on leaving off the marine acid, for six or eight weeks, it is very probable scorbutic symptoms will return. It must then be repeated, in more frequent, and in stronger doses. I never saw occasion for less than thirty, or for more
“ than

“ than sixty-six drops, to a quart ; but this must be left to the good sense
 “ and the discretion of the surgeon.”

In a note he adds, “ I thought I had stored myself with it very plenti-
 “ fully this voyage, (1794-1795,) but I was mistaken. We had used
 “ it, as a preventative, from our leaving *England* to *Port Jackson*, and
 “ from *New South Wales* to *Masafuero*. At this place, meeting with se-
 “ veral *American* ships, which were greatly distressed with the scurvy,
 “ and not permitted, by the *Spaniards*, to go into a port, I was induced
 “ to part with a considerable quantity of it, for their relief. This we had
 “ afterwards cause to regret, for though both ships were remarkably heal-
 “ thy, while it lasted, yet in five weeks and six days, after it was exhaus-
 “ ted, the scurvy broke out amongst us, as before related.

“ I CAN speak with safety when I add, that, in the course of two
 “ voyages round the world, I am every day more and more convinced
 “ of its efficacy.”

THE history which he above alludes to, is as follows:— “ It was on
 “ the 5th of April 1795, that we passed this port (1), in company with
 “ the *Emilia*, Captain QUESTED. In running down the coast, we saw
 “ few whales, and although we had not been two months from
 “ *Coquimbo*, yet I wished to put in here, for a fresh supply of vegeta-
 “ bles ; as, should we pursue our intended route, to *California*, the
 “ prospect of touching at any port was very distant ; and from some
 “ symptoms amongst our crew, I knew the sea scurvy was not very re-
 “ mote. It is true, while the marine acid lasted, I had little apprehen-
 “ sion of danger, because experience assured me I could trust to its effects.
 “ But that valuable medicine, from its daily use, was fast exhausting,
 “ and we could get no supply. A spirit of discontent, however, which
 “ prevailed on board the *Emilia*, made it rather unsafe to go to *Payta* ;
 “ so that we proceeded, without interruption, until we fell in with a
 “ considerable body of whales, near the *Galapago* islands, where we crui-
 “ sed together, for three months ; during which time, by the aid of the
 “ muriatic acid, both ships enjoyed an excellent state of health. In July,
 “ the two ships separated ; and, on the 8th of July, we fell in with a great

(1) *Payta* in *Peru*.

“ number of whales, when, in twelve days, we got three hundred barrels
 “ of oil. But what I feared came to pass. Medicine being done, and no
 “ vegetable in the ship, our people fell fast down in the scurvy (2).”

To the foregoing strong testimony, in favour of muriatic acid, it may be added, that if the ideas inculcated by professor REICH, concerning the efficacy of the mineral acids, in the cure of fever, be confirmed by the experience of others; we must allow those acids to be the most powerful means of counteracting debility, in all its degrees, from simple predisposition, to the most advanced stage of actual disease. And that physician prefers the muriatic, to both nitric and sulphuric acids.—See Medical and Physical Journal, vol. IV, page 562, and vol. V, page 173.

If the medical effects of *mercury* are to be accounted for by its oxygenating the system, ought not the use of it to be beneficial in scurvy? And have the trials, which are supposed to have proved its deleterious effects, been made with sufficient accuracy?

THE first author who observes its pernicious effects, is in 1633, (HARTMANN DE SCORBUTO, page 345, LIND page 356,) but we are not informed by the latter author, on what proofs the opinion of the former was founded.

BOERHAAVE (Aph. § 1165) says, that in the fourth stage, mercurials are sometimes of use. But his commentator, VAN SWIETEN, although he is disposed to admit that a prudent use of them may be allowed in the first stage of the disease, (wherein he says a viscid lentor prevails, and there is not much acrimony present) thinks them totally inadmissible in the fourth stage, where there is scætor of the mouth, swelled, painful, or ulcerated gums, &c. And he observes that a very small quantity of mercury, given for the cure of venereal disease, to patients of a scorbutic habit, had very pernicious effects.

BACHSTROM (observat. circa scorbutum, 1734; LIND page 399) condemns the use of mercury.

THE college of physicians at Vienna in 1737, in their letter to KRAMER,

(2) Should these pages ever fall into the hands of Mr. BROWN, I hope he will excuse the liberty I have here taken with part of his Journal, on account of the advantage to humanity that may result from the knowledge of the foregoing statement, and of the impossibility under which I am, of making a reference to himself.

(LIND page 415), begin their remarks on the cure, by noting with infamy those who have recommended a *mercurial salivation* in this disease.

FREDERIC HOFFMAN (med. rat. syst. tom. IV, page 5), relates the bad effects of mercury, given both externally and internally, to a man afflicted with scurvy, whose tongue was ulcerated; and lays it down, as a practical rule, "that medicines derived from a mercurial source, however prepared and administered, are, in the scurvy, almost always productive of the greatest harm; but are far more certainly and grievously detrimental, in scorbutic affections, which attack the teeth and tongue, &c."

DOCTOR LIND (page 143), says he has made trial of mercury, in certain stages and symptoms of this disorder. The particular results I cannot find any where mentioned; but the following passages evince his conviction, that its use is, in general, hurtful, page 203. "In a spontaneous salivation; or, as is much oftener the case, in a scorbutic habit, when a copious spitting has, unfortunately been produced by some mercurial medicine, where immediate danger is apprehended, speedy revulsion must be made, &c. page 221. Medicines of the fossile or mineral kind, such as steel, antimony, and especially mercury, do manifest harm;" page 540. "While others (specifics) of a mercurial nature, dignified with the title of infallible antiscorbutic medicines, may perhaps be given for some particular intentions, but cannot be administered with safety to a person afflicted with the true scurvy."

DOCTOR CULLEN (§ 1802) "I shall conclude my observations upon the medicines employed in scurvy, with remarking, that the use of mercury is always manifestly hurtful."

In opposition to so many great names, it may require some apology, to introduce the experience of a writer, whose lot has fallen in the humbler walks of the profession; and whose work, besides, contains so many bold assertions, and shews such enthusiastic attachment to a particular doctrine, that we are naturally disposed to peruse it with a sceptical caution. But, whatever we may be disposed to think of his reasonings, the candour with which he has recorded his fatal, as well as successful cases, pleads in favor of his veracity, in the statement of a fact, in which he could not be mistaken. Mr. MACLEAN says, "every case that I have met with at sea, resembling what has been described by authors under the name of scurvy,

“ vy, yielded to mercury. It was so certain a cure, that I never thought
 “ of using any other remedy. Nor did it at all, when properly exhibited,
 “ increase the debility of the patient. The reason why mercury has so
 “ often been found injurious in scurvy, is, that it has seldom been given
 “ in a proper manner. The salivation, of which authors complain, as
 “ being so easily excited, would never occur, if it was exhibited in such
 “ a manner, as regularly to support the excitement.” (View of the sci-
 ence of life, page 115).

Now, supposing that both the acids and the mercurial calces operate by oxygenating the system, I think we may explain, why the former are beneficial, and the latter generally hurtful, in the treatment of scurvy.

AN extensive induction of facts renders it probable, that oxygen, if not, according to Dr. GIRTANNER's idea, the same with the principle of excitability; is allied to it, in such a manner, that the abundance or defect of the one, is accompanied with a similar condition of the other. But, when the excitability exceeds the natural standard, or in the language of Dr. BROWN, is accumulated, the ordinary stimuli excite an unusual action, and rapidly exhaust the excitability. It might be supposed, that when, by this action, it has been reduced to the natural quantity, the usual stimuli would only have the same effect that they have in the ordinary condition of the system. But experience shews that (probably from the tendency which every motion, once established, has to continue) the exhaustion still goes on, so as to produce a state of indirect debility. Now, it appears, from the tables of chemical affinity, that oxygen is very loosely combined with the calces of mercury. Consequently, a dose of that medicine very quickly gives out its oxygen to the circulating fluids. And the system is then in a state of accumulated excitability. Hence an unusual sensibility to the ordinary stimuli, and, if the medicine is repeated at long intervals, a state of exhaustion, or indirect debility, comes on, before the exhibition of the second dose. Whereas the bases of the acids, more powerfully retaining oxygen, give it out in a gradual manner; so that, instead of sudden accumulation, there is a slow, but constant supply of that which is wasted by the application of stimuli. There is neither so much sensibility, at first, to their action, nor such subsequent exhaustion, or collapse. One fact, in illustration of this, I can adduce from my own experience :

that

that, when under the influence of mercury, I have felt as much effect from two glasses of wine, as from a bottle, when my system was charged with nitric acid.

HENCE, in order to derive, from mercury, the same effects, as from acids, it ought to be given in small doses, and at much shorter intervals; as I before hinted, in page 23. The length of these has not been accurately ascertained, but they are probably so short, that the necessary interruption, during sleep, renders an exact adherence to them hardly possible. And, on the same principle, we may explain, why acids have been found to restore the general health, after it has been impaired, by a long course of mercury.

AFTER all, I offer this merely as a conjecture, for I am sensible that there are strong objections to the theory which explains the action of mercury by simple oxygenation. The oxygen contained in a few grains of calomel, or in a still smaller quantity of corrosive sublimate, appears very inadequate to the effects which those medicines are known to produce. And the very different operations of the calces of iron, of copper, of mercury, and of arsenic, can hardly be explained by the proportions of that principle which they contain, or the state of combination in which they hold it.

APPENDIX No. XIV.

THE external application of *Oil* to the human body, is of high antiquity, and it was directed to various purposes. Of these, the most ancient, of which we have any account, was for the consecration of Kings, of Priests, and even of inanimate things, set apart for holy uses (1). The practice appears to have been peculiar to the *Hebrews*, and from them handed down to *Christian* princes. It seems intended to typify, by its soothing qualities, the benign influence of divine grace (2). Of nearly equal antiquity was its use, among this people, as an article of luxury (3).

AMONG the *Greeks*, it was used, for this purpose, with the addition of perfumes, as early as the *Trojan* war, or at least, before the days of HOMER. Thus, we find JUNO, anointing her body with perfumed oil, before she adorned herself, to fascinate the mind of her husband (4). It was also considered as necessary to prepare the body for violent exercise, or to relieve

(1). 1 SAMUEL X. 1 EXOD. XXVIII. 41. XXIX. 7. XXX. 23—25; XXXVII. 29. LEVIT. VIII. 12, Psal. CXXXIII. 2. GENES. XXVIII. 18; XXXV. 14. The same word, *משח*, translated ointment, in Psalm 133, 2, is rendered oil in EXOD. 29, 7. And, in fact, the holy ointment, EXOD. XXX. 23—25, was nothing more than a perfumed oil. The spices were pounded separately, then mixed, and infused in water. The water, thus impregnated, was mixed with oil, which was boiled, till the water exhaled. (MAIMON. PATRICK COMMENT. on Ex. 30, 25. WITZIJ Miscel. Sacr. L. II. Disc. 2. §. 56). In this process, we see, at least a practical knowledge of elective attractions. Had the mere infusion of spices been exposed to the heat of boiling water, the essential oils would have been volatilised along with the water, and the fragrance entirely dissipated. But the addition of the fixed oil, by its chemical attraction, retains the essential ones, and the watery parts only arise in vapour.

(2) The reader may see the symbolical use of oil treated of at large, in a curious treatise on General Philosophy by THEOPHILUS GALE, published at London in 1676. L. III. c. 2. sect. 7, §. 5. page 315.

(3) Deut. XXVIII, 40 &c. This, among other indulgences, was forbidden to the *Israelites*, on the days of expiation; which is alluded to by our Saviour, in MAT. VI. 17. SURENHUYSEN'S Miscelna. vol. II, page 252.

(4) ————— αλεψατο δὲ τὸν ἑαυτῆς

Ἀμβροσικῶν, ἔδανον, ὅτι οἱ τεθυγαμένον ην. II. ξ 171.

—————, and round her body pours

Soft oils of fragrance, and ambrosial showers. POPE XIV, 197.

where the reader will find an interesting note, on the antiquity of the practice. See also POTTER'S Antiquities, L. IV. c. 19. and ATHENÆUS L. XV.

it from the fatigue which was the consequence of it (5). Hence, in every gymnasium, there was an apartment, called *eleuthesium*, *alipterion* or *unctarium*, appointed for the unctions, which either preceded, or followed the use of the bath, wrestlings, &c. (6). This application was thought to preserve a due moisture of the body, and supplemēt of the muscular fibre (7), and by such operation to conduce towards the prolongation of life (8).

At length, from observing how conducive gymnastic exercises, of which the bath and unctions formed an essential part, were to the

(5) Μετὰ δὲ τούτῳ βαλὺν γένειν, πόσει ἀργεῖν. PLATO Menex. 238.

Communia deinde omnibus sunt post fatigationem cibum sumpturis, ubi paulum ambulaverint, si balneum non est, calido loco, vel in sole vel ad ignem ungi, atque sudare: si est, ante omnia in tepidario residere; deinde, ubi paulum conquierunt, intrare, et descendere in solium; tum multo oleo ungi, leniterque parficari. Celsus. L. I, c. 3.

Si nimium alicui fatigato pene febris est, huic abunde est, loco tepido demittere se inguinibus tenus in aquam collidam, cui paulum olei sit adjectum: deinde totum quidem corpus, maxime tamen eas partes quæ in aqua fuerunt leniter perfricare ex oleo, cui vinum, et paulum contriti falis sit adjectum.—Ibid.

Ex ijs [arboribus] recreans membra olei liquor, viresque potus vini. PLIN. Nat. Hist. L. XII. C. 1.

[Axungia] prodest et confricatis membris; itinerumque lassitudines et fatigationes levat. Id. L. XXVIII. c. 9.

Oleum quod ex maturis olivis exprimitur, falis expers, ætate medium, moderate candidum est, lenit, omniumque maxime humectat et emollit, lassitudinis optimum remedium, et ob id Græcis *Acopum* appellatum: corpus ad ebundam mentem promptius alacritique reddit. FERNELIUS. Method. Med. L. 6. c. 4.

It was joined, for this purpose, with the affusion of warm water. HOM. ODYSSEY. X. 360—364.

(6) Encyclop. Brit. vol. VIII. page 250. The Athletes were anointed with a glutinous ointment called *Cerama*. MARTIAL. VII. 31. 9. IV. 4, and 19. XI. 48. JUVEN. VI. 245. ADAM'S Rom. Antiq.

(7) Ἀλευσίη ξηραίνει, καλχυλισκομένη του ὕγρου, ὡς πολὺς δὲ καὶ ἡ ἀναλειψίη. λίπη δὲ θερμαίνει καὶ ὑγρῶναι, καὶ μαλασσει. Hippoc. de vict. rat. L. II. page 362. ed. Fœs.

Τρίψῃς ἐλαίου σὺν ὕδατι μαλασσει, καὶ οὐ δευτὸς ἐξ ἀδιαερμαίνεσθαι. Ibid. page 364.

Omni autem oleo, mollitur corpus, vigorem et robur accipit. PLIN. L. XXIII. c. 4.

(8) Duo sunt liquores, corporibus humanis gratissimi; intus vini, foris olei, arborum ē genere ambo præcipui, sed olei necessarius. PLIN. L. XIV. c. 22.

This alludes to the following story; Centesimum annum excedentem, eum [POLLIONEM ROMULUM] DIONYSIUS ALCIBIUS hocpes interrogavit, quam maxime ratione vigorem illum animi corporisque custodisset. At ille respondit, intus mulso, foris oleo. Id. L. XXII. c. 24.

The commentator on this passage remarks, DEMOCRITUS τοῖς αὐτοῖς καὶ μακραιωνες γίνονται ἐκ τούτου, intus vino, foris oleo respondit: eadem propemodum sententia qua POLLIO. Vid. Rhodigin. cap. et l. c. Athen. 2. Alij respondisse ferunt, intus melle, foris oleo.

LORD BACON tells a similar story of one JOHANNES DE TEMPOREBUS, who was said to have attained the extraordinary age of three hundred years. Hist. Vitæ et Mōris. Super. excl. æris. 13. In the same place, he quotes the examples of several nations remarkable for longevity, who use this practice.

Professor HUFELAND reckons, among the means of attaining longevity, frequent friction of the whole skin; for which sweet scented and strong ointments may be employed with great advantage, in order to lessen the rigidity of the skin, and to preserve it in a state of softness.—Art of prolonging life, vol. II, p. 324.

preservation

preservation of health, one HERODICUS, who was born a little prior to HIPPOCRATES, but lived contemporary with him, and was master of a gymnasium, as well as a physician, first applied them, expressly, to the *Hygiene*, and to the cure of diseases; whence he is esteemed the inventor of *Gymnastic Medicine* (9). The books on regimen, commonly ascribed to HIPPOCRATES, contain several precepts regarding unction. On one of its properties, there seems to be some discrepancy between the different texts. In most of them it is alleged to warm the body, and fortify it against the influence of external cold. Thus, he advises those of a temperament between the sanguine and phlegmatic, but inclining most towards the latter (10), to anoint, rather than wash their bodies (11). And towards winter, he recommends the body to be prepared for gymnastic exercises, by unction; whereas, in summer he directs, that it should rather be covered with dust (12). The same sentiment is repeated by PLINY (13). This effect was esteemed stronger in old than in recent oil (14); which might proceed, either from the dissipation of its watery parts, or from the absorption of oxygen. The former seems to have been PLINY's idea, as he advises to reduce fresh oil to the state of old, by boiling (15). But another passage of HIPPOCRATES would lead us to suppose that he, or the author of the books

(9) PLUTARCH ex Platone, libro de iis qui ferro a numine puniuntur. Encyclopedie sur le mot *Gymnastikie medicinale*.

(10) This I take to be the meaning of the following description: 'Εἰ δὲ πυρὸς τῷ εἰληγμένῳ καὶ ὕδατος συγκρητὴν λάβοι ἐνδεέστερον δὲ τοῦ πυρὸς εἴη τοῦ ὕδατος ὀλίγον. De vict. rat. L. I, page 351.

(11) Χρίεσθαι δὲ ξυμφορώτερον ἢ λουεσθαι. Ibid.

(12) Προσχυγνῶνα πρὸς τὸν χειμῶνα - - - - - χρίεσθαι - - - - - ἐν ἱματίῳ προσκεκολλημένῳ τῇ τε στήθῃ, καὶ τῇ πάλῃ ἐν εἰλαίῳ. Ibid. L. III, page 368.

Ἐπειδὴν πλειὰς ἐπιτείλει, - - - - - τῇ τε πάλῃ ἐν κενεῖ, ὅπως ἤμισα ἐκδομασθῇ. Ibid. The author here alludes to the heliacal rising of the Pleiades, which, in the time of HIPPOCRATES, must have been about the middle of May. See the Dissertations of Mr. WALES, and the Bishop of ROCHESTER, annexed to VINCENT'S NEARCHUS.

(13) Oleo natura tepescere corpus, et contra algores munire: Eisdemque fervores capitis refrigerare. PLIN. L. XV. c. 4. Does he mean by a kind of revulsion?

(14) Vetus autem magis excalescit corpora. Id. L. XXIII. c. 4.

(15) Si vetusti non sit occasio decoquatur, ut vetustatem representet. Ibid.

on diet ascribed to him conceived it to possess a power of cooling the body (16). Perhaps their idea was, that it guarded the body against either extremity of temperature.

In a short time, the external application of oil, for the cure of diseases, became a distinct branch of the medical art, called *Yatraliptic Medicine*. It was first introduced, according to PLINY (17) by PRODICUS, a native of *Silybria*, and a disciple of HIPPOCRATES (18). The volumes which treat expressly of its precepts are lost; but we find the anointing of the body with oil recommended, among other remedies, in various diseases, as fevers (19), pustular eruptions (20), gout (20), palsy (21), lethargy (22), tetanus (23), cholera (24), hydrophobia (25), melan-

(16) *Ἡμετέροις δὲ καὶ τῷ πεποιημένῳ, κατὰ ἰσχυρὸν δὲ ὥσπερ, ἰατρικόν.* Hip. de salub. victus ratione, page 338.

(17) Nat. Hist. L. XXIX. c. 1.

(18) Not of *Æsculapius*, as stated in Encyclop. sur le mot *Yatralipte*.

(19) Ungi enim, leniterque pertractari corpus, etiam in acutis, et recentibus morbis oportet; in remissione tamen, et ante cibum. Cels. L. II, c. 14.

Utile est etiam [in febris] ducere in balneum, prius demittere in folium, tum ungere, iterum ad folium redire, multaque aqua fovere inguina; interdum etiam oleum in folio cum aqua calida miscere. L. III, c. 6.

Sape igitur ex aqua frigida, cui oleum sit adjectum, corpus ejus [breve lenta detenti] pertractandum est, quoniam interdum sic evenit, ut horror oriatur, et fiat initium quoddam novi motus; exque eo cum magis corpus incaluit, sequatur etiam remissio. In his frictio quoque ex oleo et sale salubris videtur. Ib. c. 9.

Perfricandæ quoque eæ partes [pro quibus metuimus in accessione frigoris febrilis] manibus unctis ex vetere oleo sunt eique adjiciendum aliquid ex calefacientibus. Ibid. c. 11.

Febres cum horrore venientes, perunctis leviores facit [oleum balsaminum]. PLIN. N. H. L. XXIII, c. 4.

(20) [Axungia] pruritus et papulas in balneo perunctis tollit: alioque etiamnum modo podagricis prodest mixto oleo vetere contrito una sarcophago lapide &c. Id. L. XXVIII. c. 9.

Lenticulam tollunt galbanum et nitrum, cum pares portiones habent, contritaque ex aceto sunt, donec ad mellis crassitudinem venerint. His corpus illinendum, et, interpositis pluribus horis, mane eluendum est, oleoque leviter ungendum, Cels. L. VI, c. 5.

(21) Unctioni vero aptissimum est [in Paralyti] vetus oleum, vel nitrum aceto et oleo mixtum. Id. L. III, c. 27.

(22) Vetus [oleum] lethargicis magis auxiliare. PLIN. L. XXIII, c. 4.

(23) Utilius igitur est, cerato liquido primum cervicem perungere; deinde admovere vesicas bubulas, vel utriculos oleo calido repletos, vel ex farina ciliolum cataplasma, vel piper rotundum cum sicu contusum. Utilissimum tamen est, humido sale fovere, quod quomodo fieret, jam ostendi. Ubi eorum aliquid factum est, admovere ad ignem, vel si æstus est, in sole, ægrum oportet; maximeque oleo vetere; si id non est Syriaco; si ne id quidem est, adipe quam vetustissima, cervicem, et scapulas, et spinam perfricare. Cels. L. IV, c. 3.

See a similar practice recommended by ARETÆUS; de curat. morb. acut. L. I, c. 1.

(24) Si extremæ partes corporis frigent [in Cholera] ungendæ sunt calido oleo cui ceræ paulum sit adjectum. Cels. L. IV, c. 11.

(25) Sed unum tantum remedium est, nec opinantem in piscinam, non ante ei provisum projicere &c. Sed aliud periculum excipit, ne infirmum corpus in aqua frigida vexatum, nervorum distensio absumat. Id ne incidat, a piscinâ protinus in oleum calidum demittendus est, L. V, c. 27.

choly (26), dropsy (27), profuse sweating (28), and psoa (29). In surgery, it was supposed to allay irritation in those who had undergone severe operations (30), to resolve indurations (31), even the exuberant callus of a fractured bone (32), and to remove the pain and swelling attending luxations (33). Of its application to wounds, we have an instance in scripture (34).

At length, with the growth of effeminacy and the corruption of manners, various refinements were introduced into the use of baths, and of ointments. *PLINY* accuses the *Greeks* of having converted their use, which formerly was moderate and salutary, to an article of luxury (35). Yet he thinks it was originally a *Persian* invention (36). He says the time when

(26) Si nimia tristitia est [in infanientibus] prodest demissum corpus in aquam et oleum. *Id.* L. III. c. 18.

ARÉTÆUS says, because the habits of those labouring under melancholy are of a dry and dense nature, therefore fat ointment, with gentle friction, should be used. *De cur. morb. chron.* L. I. c. 5.

(27) Quinetiam [in Hydropē vehementiore] quotidie ter quaterve opus est uti frictione vehementi, cum oleo et quibusdam calefacientibus. *Cels.* L. III. c. 21.

[In Leucophlegmatia] si is vehementior est, caput velandum est, utendumque frictione, madefactis tantum manibus aqua cui sal et nitrum et olei paulum sit adjectum. *Ibid.*

(28) Sudorem prohibere. *Id.* præstat acerbum oleum, vel rosa, vel melinum, aut myrteum. Quorum aliquo corpus leniter perungendum; ceratumque ex aliquo horum tum componendum est. L. III. c. 19.

Magisque discutit sudores [nempe vetus oleum] *PLIN.* L. XXIII. c. 4.

(29) Oleum insignem habet usum in medicina: ἔλαιον τῆς ἀγριελαιῆς sylvestris olivæ oleum, referente *Dioscor.* L. 1. c. 119. lepras et impetigines sanat, in doloribus capitis utiliter pro rosacea substituitur, sudores illitu arceat, defluentes capillos cohibet, ulcera manantia, scabiemque abstergit. *GALE,* *Philos. Gener.* p. 314.

Hinc adversum flumen subijci classis, et altero die appulsa est haud procul leu falso, cujus ignota natura plerosque decepit, temere ingresso, aquam. Quippe scabies corpora invasit, et contagium morbi etiam in alios vulgatum est. Oleum remedio fuit. *Quint. Curt.* L. IX. c. 10.

ARRIAN says, the lake was formed either by the overflowing of the river, or the influx of water from the neighbouring country. Being a mixture of salt and fresh water, it was eminently liable to putrefaction. See *Sir JOHN PRINGLE's* experiments, Paper III, Exp. 25. It would thus furnish a nidus, favourable to the generation of animalcules, which might cause this disease. They would be communicated, by contact, from one subject to another; and oil, by destroying them, might effect a cure.

(30) Tum multo is [cui calculus sectione evulsus] oleo perungendus. *Cels.* L. VII. c. 26.

(31) Duritias magis diffundit [vetus oleum]. *PLIN.* L. XXIII. c. 4.

(32) Quod ubi incidit [ossi fracto superincrevit nimius callus] diu leniterque id membrum perfricandum est ex oleo, et sale, et nitro. *Cels.* L. VIII. c. 10.

(33) *Id.* [nempe cubitus luxatus] diutius ex oleo et nitro ac sale perfricandum [reliquis membris luxatis] *Ibid.* c. 16.

(34) *LUKE* X. 34.

(35) Usus ejus ad luxuriam vertere græci, victorum omnium genitores, in gymnasijs publicando. *PLIN.* L. XV. c. 4.

(36) Persurum esse debet gentis unguentum. Illi madent eo, et accersita commendatione, ingluvie natum virus extinguunt. L. XIII. c. 1.

the custom was introduced among the *Romans* is uncertain; but that, after the defeat of *ANTIOCHUS*, and the conquest of *Asia*, an edict was issued, by the censors, forbidding the sale of foreign ointments. He inveighs against the height to which this luxury had attained in his time, the excessive price of the compositions (whereof he exhibits several formulæ); and complains that private persons, not contented with anointing the whole body, even to the soles of the feet (37), sprinkled the walls of their baths, and mixed the water in bathing tubs, with these precious ointments. That their use had even reached the camp, where the military standards were perfumed, on feast days (38).

AT this time, the application of these ointments and perfumes, employed as many people as the management of the baths. The person who superintended this department, as well as he who directed unctuous applications to the sick, was called *Fustralipes*. Under him were the *unctores*, who applied the ointment; the *fricatores*, who rubbed or curried the skin, with the *strigil*, or other instruments of a similar kind; the *dropacisæ*, or *alipilarij*, whose business it was to remove the hair, either by extraction or depilatory applications; and lastly, the *tractatores*, who were employed in gently moving, and squeezing, or kneading all the limbs, to render them supple, and at the same time, give a pleasing sensation (39). Mr. LE CHEVALIER DE JAUCOURT adds, that they carried depravity so far, that men had those offices performed, in the bath, by women; for which he gives the authority of *MARTIAL* (40). Here we may observe, that we sometimes find a remarkable coincidence between the practices of the rude

(37) The ancients anointed their feet with oil, before they put on shoes; and therefore, when they went abroad, they carried a small vessel of it, for that purpose. Hesychius. Meursius Tom. V, p. 517.

(38) *PLIN.* L. XIII, c. 1 and 3. The ancients were wont to anoint themselves, and afterwards expose their bodies to the sun, that their skin might the better imbibe the oil. Those who did so, were said *chromiari*. Thus *PETRUS* Sat. IV, 17.

*Que tibi summa boni est? Uncta vixisse Patellâ
Semper, et assiduo curata cuticula sole:*

Meurs. T. VI, p. 92, Cornut. in *Perf.*

*I precor, et totos avida cute combibe soles:
Quam formosus eris.*

Martial. L. X, Ep. 12.

(39) *Encyclop.* sur le mot *Gymnastique medicinale*.

(40) ————— *Percurrit agile corpus arte tractatrix,
Manumque doctam spargit omnibus membris.*

L. III, ep. 81.

heroic ages, and those wherein vice and corruption have attained the greatest height. Customs in which the plain and simple virtue of the first few nothing to blame, are laid aside, as scandalous, in times of more refinement; and again revived, when degeneracy has increased so far, as to destroy even the sense of shame. Thus the virtuous *POLYCASTE* was not ashamed to bathe and anoint with oil the youthful guest of her father (41).

FROM the above description of the *Greek* and *Roman* baths, we see that they very exactly resembled those still used in *Egypt*, and in various parts of *Asia*, of which we have a very minute account from the accurate *ALPINUS*, and an animated and voluptuous picture from the lively *SAVARY*. The former mentions the habitual use of unction in those baths (42), and gives several instances of its application, by the *Egyptian* physicians, to the cure of diseases (43).

THE power of oil to destroy vermin was known to *PLINY* (44); but we owe to the researches of modern physiologists, the discovery that this is ef-

- (41) Τόφρα δὲ Τηλεμάχου λῆσεν καλὴ Πολυκάστη,
 Νεστορος ὀπλοτάχῃ θυγάτηρ Νηληϊάδαο.
 Ἀνδρᾷ ἐπεὶ λῶσέν τε, καὶ ἔχρισεν λῆπ' ἐλαίῳ. *Od.* III, l. 464.
 The last fair branch of the Nestorean liné,
 Sweet *POLYCASTE*, took the pleasing toil,
 To bathe the Prince, and pour the fragrant oil. *Pope.* l. 593.

(42) Ex [mulieres] etenim sapissime corpora in ijs [balneis] lavant, et mundant ab illuvie, perlotaque varijs ornant odoribus, ut recte unguentis oleant. *Alp. de med. Ægypt.* L. III. c. 15.

Frictio [in balneis] quam volis manuum plerique operantur, et nonnullis inunctis oleo sesamino. *Ib.* c. 18.

(43) In biliosis febribus - - - balneorum - - - est frequentissimus usus. Corporaque illa in primis in aërem, temperate calidum paululum versari sistant, in quo exudant, atque cutim meatus laxantur, mox oleo violaceo, vel nenupharino ab eis inunguntur, &c. L. III. c. 19.

Sunt qui inungunt per horam ante accessionem [febris] totam spinam dorsi a nuca ad lumbos usque, oleo antiquo, sumpturo, ruta, artemisia, absinthio, spica Inda, mastiche ac thure ebullito, ipsique calida inungentes. præmissa parva ac levi frictione. L. IV. c. 15.

Primis harum febrium [pestilentum] ita peractis diebus, ad inunctionem totius corporis accedunt, ante quippe leniter perfricata, atque postea calida inunctione inuncta naturæ ad cutim expulsionem eo auxilio maxime adjuvantes; inunctionem vero ex oleo amygdalarum amararum, cum nitro rubro. quod natura expellens parant. In pueris ut etiam nuper dictum est, variolis, vel puncticulis infectis, hac inunctione nullum remedium securius vel præstantius habent, *Ibid.*

(44) Contra vespas remedio est, oleo aspergi [uvæ] ex ore. *PLIN. N. H. L. XV. c. 28.*

Oleo quidem non apes tantum, sed omnia infecta exanimantur, præterque ei corpus uncto in sole penentur. L. XI. c. 19.

fed by shutting up their respiratory pores, whereby the air, necessary to oxygenate their blood, is excluded, and they die as by drowning (45).

LASTLY, we find the anointing of the body with oil, as one of the last pious offices towards the dead, in times of remote antiquity (46).

As our present business is with the use of unction among *Mafulians*, it is desirable to know the opinion of their own physicians on its effects. A compendium of this is contained in the following translation of a passage, which I received in manuscript from a *Mafulian* doctor. I regret that I did not, at the time, inquire from whence it was taken, which I have not since been able to ascertain. “ The practice of inunction in the bath is at-
 “ tended with several advantages. In the first place, although the bath is
 “ of itself moist, yet, because of its promoting perspiration, and thus diffi-
 “ pating moisture, it may become a cause of dryness. But the oil, entering
 “ the pores, prevents this effect, and confers moisture and softness (47).
 “ Secondly, in consequence of profuse perspiration, certain matters are
 “ drawn outwards, and in passing through the pores, irritate the skin;

(45) Mr. JOHN BELL relates an experiment which finely illustrates this position. “ When we close up the
 “ stigmata of an insect, one by one, the parts become in the same proportion paralytic; if we varnish over
 “ the stigmata of one side, that side becomes paralytic; if we varnish over the stigmata of both sides, up to
 “ the last holes, the insect lives, but in a very languid condition: it survives in a kind of lethargic state for
 “ two days, without any pulsation in its heart; if we stop the two highest holes, it dies.” BELL’s Anatomy.
 Vol. II. page 167. See the progress of this discovery in the works of MALPIGHI, REAUMUR, and BONNET.

(46) Καὶ ὅτε δὴ λῶσιν τε, καὶ ἤλειψαν λίπ’ ἐλαιον. II. XVIII. l. 350.

The body then they bathe with pious toil,

Embalm the wounds, anoint the limbs with oil. POPE l. 411.

————— ῥαδάσει δὲ χεῖρας ἑλαιοῖς,

Ἀμβροσίῃ, ἵνα μὴ μιν ἀποδρῦσαι ἐλκυζάζων. II. XXIII, l. 186.

Celestial VENUS, hover’d o’er his head,

And roseate unguents, heavenly fragrance shed. POPE l. 228.

————— and smoothed the hero o’er with oils,

Of rosy scent ambrosial, left his corse,

Behind ACHILLES’ chariot dragg’d along

So rudely should be torn. COWPER.

The translator given from VILLOISON, the following note, on this passage. “ The oil would lubricate
 “ and make the body slide over such impediments as might otherwise tear and disfigure it.”

Δυναὶ δ’ ἐκκαλέσας λῶσαι κέλετ’, ἀμφὶ τ’ αὐλεῖψαι. II. XXIV. l. 582.

Then call the handmaids, with assistant toil,

To wash the body, and anoint with oil. POPE l. 730.

(47) Dr. MITCHELL says, that oil, applied to the skin by friction, is useful, when the oily effusion from the cuticular vessels of the skin is too sparingly supplied, or too quickly removed, in consequence of which, the epidermis is apt to become horny, to crack, and to induce disagreeable, or painful sensation. Medical and Physical Journal, Vol. IV, page 10.

“ whence we see eruptions of pimples [prickly-heat] in the hot season:
 “ now the oil, by its unctuous quality, softens the pores, and guards
 “ them from injury (48). Thirdly, it cannot be doubted, that during
 “ the great inanition which takes place while sweating in the bath, part
 “ even of the radical moisture of the body is expelled: but the oil which
 “ enters the pores, retains the radical moisture in its place. Further,
 “ the physicians of that country [probably *Greece* or *Arabia*] chiefly
 “ use the oil of olives, which prevents the accumulation of morbid
 “ matter. Besides, the bath is often used in diseases of the skin, pro-
 “ ceeding from dryness. The oil, besides correcting this defect, con-
 “ fers a softness on the skin. Lastly, the skin becomes hard from any
 “ obstruction of the pores: and oil removes that hardness (49).”

The *Hindoo* physicians repose great confidence in the use of oily frictions.

(48) A medical friend informs me, that one hot season, he was in the daily habit of cold bathing, and his body was covered with prickly heat, to such a degree as to be almost intolerable. At length, it occurred to him, that by rubbing himself with pease-meal, or *besun*, which had been his constant practice while bathing, the skin was deprived of its unctuous defence, and so more affected by the acrid matter of perspiration. He immediately desisted from such frequent use of *besun*, that is, instead of once and sometimes twice a-day, he applied it only twice a week; but continued the cold bath, in all other respects, as before. The prickly heat disappeared, and gave him no farther trouble.

(49) تدبیرین بدن در حمام چند فواید دارد اول آنکه اگر چه مرطوب است حمام، گریه بربب تحلیل رطوبات و ادرار عرق موجب یبوست هم میتواند بود و روغن در مسام و رآمده مانع آن میشود و ترطیب و تلدین می بخشد دوم آنکه به تبعیت ادرار عرق جذب بعضی مواد بطرف خارج و مرور آن از مسامات ضرر بجلد میتواند رسد چنانچه در موسم گرما از گرمی و آنها تبیین میشود روغن بسبب دهنیت مسام را نرم میکند و از ضرر محافظ می شود سوم آنکه شگ نیست که چون عرق از تحت جلد در حمام بر می آید بعض رطوبات اصلی نیز متوجه خارج بسبب خلا میتواند بود و روغن که در مسام در می آید رطوبات اصلی را بجایدارد و نیز مستعمل اطبای آندیار اکثر روغن زیاده است و آن روح تازه هم میکند علاوه آن اکثر حمام است برای امر آن جلد که بسبب یبوست عرق می شوند روغن سوای دفع یبوست نرم می جلد هم بخشد و نیز از بند شدن مسام جلد تحت میگرد و روغن آن سختی جلد را دفع میکند

In answer to my inquiries on this subject, Mr. BOYD, whose knowledge of the *Sanscrit* language has enabled him to search deeply into their medical records, favoured me with some extracts from the *Sushrout*, a very old book, and of high authority among the *Brahmans*, in which is enumerated a variety of oils and unctuous substances, both from the vegetable and animal kingdoms. The articles of both kinds are no less than seventy-six in number, Among these the most distinguished are clarified butter from the cream or milk of various animals, and the oil of *Sesamum*.

THE principal virtues for which their use, by way of inunction, is commended are, giving softness and sleekness to the skin, flexibility to the limbs, and stability to the body in general; increasing the secretion of fat and of the femoral fluid; prolonging life; curing madness, epilepsy, fever, œdema, cutaneous diseases and worms; allaying lancinating pains of the abdomen, and those from bruises in whatever part; curing the bites of wild animals, and even of serpents.

BESIDES this long catalogue of simple oils and unctuous substances, the Hindoo books treat of various medicated oils, calculated to answer particular indications.

THE declension of arts, and of discipline, going hand in hand with that of the *Roman* empire, gymnastics fell into disuse; and the new form which society assumed, on the revival of letters, together with the revolution which gun-powder caused in the military art, prevented them from being resumed. The habitual application of oil to the body in health was inconsistent with modern ideas of cleanliness; and our faith in its medical efficacy is greatly diminished. Yet there are not wanting, among the later annals of the healing art, instances of its salutary effect.

DOCTOR CULLEN considers the operation of emollients, (whereof oily and unctuous substances, whether from the animal or vegetable kingdom, constitute one class) to be rendering lax and flexible the parts to which they are applied. He thinks the direct action of oil, applied externally, is nearly, if not entirely, confined to the cuticle; but that the relaxation produced there is often, by sympathy, extended much farther (p). On this principle we must account for the efficacy ascribed

by MURRAY (51), on the authority of ROSENSTEIN, to oily frictions, in allaying the uneasiness which, on changes of weather, attacks the seat of old wounds and fractures. We have seen before, that CÆLIUS recommended them with a similar intention (52). For the sensibility of a part depends greatly on the tension of its fibres. On the same principle, joined perhaps to its power of obtunding acrimony, we must account for the good effects which professor HUFELAND found from its application in a morbid irritability of the male genital organs (53). And the same property must explain a fact mentioned by Doctor BLANE (54), that, in a case of locked-jaw, successfully treated by Doctor WARREN, the uneasiness arising from the spasm was allayed, by constantly drawing a feather, wetted with oil, over the temples.

BUT, in considering the external operation of oil, we must take into our account the effect of the friction, by means of which it is applied. This, if extensive, and long continued, excites the vessels of the skin, and consequently the whole vascular system, to stronger action. The cutaneous pores are at the same time relaxed by the oil, and by these united causes, perspiration is increased. Doctor HUFELAND accounts in this way for the good effect which anointing the body is said to have had in the early stage of plague; for says he, “ it has been observed “ that this remedy was only of avail when a great perspiration ensued.” (55) The attention of medical men has lately been called to this remedy, by Mr. BALDWIN, who appears to have been led to the trial by a very wild and eccentric theory (56). But, independently of that, its use among the *Egyptians*, in pestilential fevers, described by ALPINUS, might naturally have suggested it. Whatever we may think of his reasoning, the facts which he has adduced, in favour of its efficacy, deserve some attention. And they have received a strong confirmation

(51) *Apparat. Medic.* Tom. II, p. 63.

(52) *L.* VII, c. 26.

(53) *Medical and Physical Journal*, Vol. VI, page 71.

(54) *On diseases of Seamen*, p. 570.

(55) *Medical and Physical Journal*, Vol. VI, page 71.

(56) BALDWIN'S *Political Recollections* relative to Egypt. See also *Annals of Medicine*, Vol. II, page 373; and CURRY on Water, Appendix page 54.

from the benevolent exertions of Father LEWIS, in the plague hospital at *Smyrna* (57).

If inunction with oils and fats have ever been successful in curing the bites of snakes, and other venomous animals, or of the mad dog, it must be explained in the same manner. And notwithstanding its inefficacy in the numerous trials made by FONTANA on animals, it is difficult to withhold our belief from some of the testimonies in its favour. Of these we find a long list in MURRAY (58), to which we may add those made by Mr. BALDWIN, apparently with great fairness, on rats, with the poison of the scorpion (59). MURRAY gives also several instances of its failure, and endeavours to reconcile the discordant evidence, by the want of accuracy in ascertaining the species of snake, which inflicted the bite; a difference in the depth of the wound, or in the nature of the part which received it; the quantity of poison infused; or the peculiar temperament of the subject. And he concludes by declaring the remedy worthy of farther trial.

For the bite of a mad dog, it was recommended by Dr. SIMS, on the authority of an ancient *Greek* manuscript (60); and one case is given, by Mr. SHADWELL, where inunction with oil, and forcing small quantities of it down the throat, seem to have effected a cure, after the disease had begun (61).

(57) Monthly Magazine, April 1798. Another Medical Repository, Vol. II, p. 117. The *Scavans* who accompanied the French expedition to Egypt mention the remarkable success which had attended the practice of friction with oil in the plague hospital at *Smyrna*, and give an abstract of a little work containing instructions for its application and proofs of its utility.

The necessity of early inunction and of continuing the friction till the perspiration flows copiously, is strongly inculcated. The perspiration may be promoted by drinking an infusion of alder flowers, (probably a cooling and lightly aromatic drink would answer equally well), and several directions are given for the regulation of diet, but nothing else is recommended in the way of medicine. (Memoirs relative to *Egypt*, &c. &c. Annual Register for 1800. Head Criticism, &c. p. 161).

Dr. BALDWIN tried the oil friction, as recommended by Mr. BALDWIN, in a case of plague, which proved fatal. It excited a profuse perspiration, but could not rescue the patient from a fatal termination on the sixth day of the disease. It proved more successful with a typhus patient, who derived very evident benefit from its use. Travels in *Turkey*, &c. p. 487, 512, 536.

(58) App. Medic. II, p. 57, &c.

(59) Political Recollections.

(60) Memoirs of the Medical Society, Vol. II, p. 1.

(61) Ibid. Vol. III. page 464. In so hopeless a disease, a single successful case is abundantly sufficient to justify farther trials. But, that expectation may not be raised too high, which inevitably leads to disappointment, it is proper to add that Mr. SHOOLERED informs me he has tried this remedy, both in this disease and in tetanus, as far as it could be tried, by the mouth, by constant universal frictions, and by gliders, without the smallest benefit.

BUT perspiration is not the only excretion increased by friction with oil. Dr. CULLEN informs us, from his own experience, that when long continued upon the teguments of the lower belly, it remarkably augments the discharge of urine (62). And, on this principle, it has been used in the cure of dropfy. Among the ancients, we have seen above its employment by CELSUS in that disease. And MURRAY adduces precepts from *ÆTIIUS*, *GALEN*, and *DIOSCORIDES*, to the same purpose (63). He then gives, from modern writers, many instances of its efficacy in the cure of ascites, and lays down the following directions for its application. “ The belly
“ of the patient is to be well rubbed, morning and evening, or three times
“ a-day, for one quarter, one half, or a whole hour, with the hand dipped
“ in olive oil. This practice to be continued for some weeks, or a month.
“ Thus, after some days, a copious flow of urine is excited, the belly be-
“ comes open, and the swelling of the body subsides, with a return of the
“ natural strength. A swelling of the feet remaining, disappeared under
“ the same treatment” (64). Dr. DONALD MONRO found the best effect in anasarca, from rubbing the belly, the legs and the feet, morning and evening, with oil (65). From what has been said, we may draw the following conclusions:

1. THAT the application of oils, and other unctuous substances, to the skin, serves to guard the body against the inclemency of the weather, particularly cold and moisture.

DOCTOR SPARMAN says, the ointment of foot and grease, with which the *Hottentots* smear their bodies, defends them so much from the action of the air, that they require very few clothes. And Dr. CURRIE, with a similar intention, recommends the use of inunction to *Europeans*, in warm climates, especially after warm bathing, to defend the body from the chilling effect of evaporation (66). He adduces the example of savage nations.

(62) *Materia Medica*, Vol. II, page 126.

(63) *Appar. Med.* Vol. II, page 54.

(64) *Ibid.* page 55.

(65) *Treatise on Chemistry and Materia Medica*, Vol. II, page 299.

(66) *Medical Reports on Water*, &c. page 204. &c. He quotes the following passage from *VERULAM*: “ Inunctio ex oleo, et hyeme confert ad sanitatem, per exclusionem frigoris, et retinendos spiritus, et prohibendam evaporationem eorum, et arcedam vim aeris, que tunc maxime prædatoria. Ante omnia igitur usum olei, vel olivarum vel amygdali dulcis, ad cutim ab extra ungendam, ad longævitatē conducere existimamus. *Ibid.* vitæ et mortis. Operatio super exclusionem aeris, § 20, 17.”

who compensate, in this way, for the defect of clothing; and observes that the ancients were accustomed to anoint their bodies, before the exercise of swimming, to mitigate the shock of immersion (67). In the moist climate of *Bengal*, the practice of inunction is more frequent than in the northern and western parts of *Hindooßan*, where the air is drier.

2. IT may prevent too profuse perspiration, in hot weather, which is one cause of debility. It seems to be with this view that HIPPOCRATES, in a passage quoted above, recommends in summer, the wearing of clothes imbued with oil; and we see that the *Asiatic* physicians entertain the same idea. MURRAY is of the same opinion (68). Dr. CULLEN says there is no just foundation for this (69); but the only argument which he produces against it, viz. "the general practice of the ancients, as well as of *Asiatics*" "in modern times," may only prove that a diminution of perspiration, which, though perhaps very considerable, will be compensated by other secretions, is attended with no bad effects on the system. Doctor CURRIE says, that unguents of a proper consistence may retard excessive sweating, yet not obstruct moderate and necessary perspiration; and being themselves evaporable, they may keep up a coolness that shall diminish the necessity of the natural discharge (70). The real state of the fact can only be ascertained by statical experiments.

3. MAY it serve as a protection from a contagion? Mr. BALDWIN thinks that persons so prepared may attend their friends in the plague, without the apprehension of danger (71). And a similar practice is hinted

(67) Medical Reports, &c. page 112. He gives the authority of HORACE — L. II, Sat. 1. ———

Ter uncti

Transago Tiberim, somno quibus est opus alto.

And Hieron. Mercurial. de arte gymnastica, L. III, c. 14.

(68) Claudendo poros, sepe nocet; in morbis præcipue, qui miasma pro causa habent. App. Med. Vol. II, page 51.

(69) Materia Medica, Vol. II, page 127.

(70) CURRIE, l. c. page 205.

(71) The *French* savans in *Egypt* say that in one year, in which the plague carried off a million of people in *Egypt*, there was no instance of an oil-porter being attacked by it. And they give numerous histories of inunction having preserved from the disease. (Memoirs relative to *Egypt*, &c. New Annual Register for 1800, page 163). The translator remarks, on this passage, that during the great plague in *London* the tallow chandlers enjoyed a similar exemption. Doctor WITTMAN says, the merchants of *Cairo* positively affirm that the oil-sellers, water-carriers and tanners, are not subject to plague (p. 531). He also adduces several instances, which fell under his own observation, wherein he thinks that oily frictions proved effectual

hinted at by Doctor MONRO DRUMMOND (72). If the practice has any effect in this way, it is by obstructing one channel of contagion, that by the skin. But the experiments of Mr. SEGUIN and Doctor CURRIE make it rather improbable that contagion is ever conveyed in this way: while the epidermis is sound (73). At any rate, it is evident, that without other precautions this must be unavailing.

4. MAY nourishment be thus conveyed? Doctor CULLEN says the absorption of oils from the surface is never in considerable quantity (74); and from the experiments related by Doctor CURRIE (75), we must conclude that when the body is immersed even in watery fluids, much less is absorbed than had been supposed. The relief to thirst experienced from that practice, must therefore be accounted for by the diminution of perspiration, and the sympathy of the vessels of the mouth with those of the skin. It is also worthy of remark, that ALPINUS, in his minute account of the process used in *Egypt*, for fattening the human body (an art which it seems is there reduced into a system, and of which the bath is a principal instrument) does not mention unction as applied to that purpose (76).

5. IT is worthy of trial in the incipient stage of plague: and, combined with internal exhibition, in the bites of venomous animals, of the mad dog, and in Tetanus. But we have not yet sufficient grounds of confidence in it to supersede the use of other remedies; and therefore it should be used so as not to interfere with their exhibition.

as a preventative (page 487, 492, 512) Captain FRANKLIN informs me, on the authority of Mr. THORNTON, a respectable merchant of *Constantinople*, that the same enviable security is enjoyed by the oil-sellers in that city, and that the wearing of shirts dipped in oil (the *lindon chitonion*, of HIPPOCRATES), had been found useful in the prevention of the disease. Mr. ETON says, the plague is unknown to those nations who are accustomed to rub their bodies with oil. (*Survey of the Turkish Empire* p. 267). Doctor MERRILL quotes a similar exemption from pestilential fever, enjoyed by the tallow-chandlers of *Philadelphia* in 1793, and by those of *New-York* in 1795 and 1796; (*Trotter's Med. Naut.* Vol. II, p. 304.) and thinking he has sufficient evidence that the matter of contagion is a peculiar modification of nitrous acid, he explains, on that principle, how oily substances arrest the noxious effluvia, and how a person may shield himself from pestilence by unction with grease. (*Ibid* p. 291, 295).

(72) *Sintne quibus spiramenta linere ita possit ut contra contagionem impune claudas, nescio. Majores profecto nostri, pigmentis se infecerunt, Indique adhuc Americani corpora sic inscribunt, diversisque imaginibus variant: homines utrique sanissimi.* De Feb. Arcend. Thes. med. III, page 149.

(73) *Medical Reports*, page 272; and Appendix, page 62—63.

(74) *Mat. Med.* II, p. 126.

(75) *L. c.* p. 177, 245, 266.

(76) De Med. *Ægypt*. If we may credit his account, Doctor GREGORY's maxim, "neque homo, ut hos ad libitum saginari potest," (*Consp. med.* 1, 58,) is not applicable to the *Egyptians*.

6. Its utility in dropfy appears to be better founded ; and as it does not prevent the giving of proper medicines by the mouth ; it ought, in general, to be used as a powerful auxiliary. In this, as well as the last instance, it must be remembered, that as much is to be expected from the brisk and long continued friction, as from the oil.

APPENDIX No. XV.

The following letter from Captain JOHN WRIGHT, gives a clear idea of manner of perforating the gunwale plank mentioned in page 19.

DEAR SIR,

IN mine of the 6th of October, I communicated a method of ventilating a ship, which may be practised with success, and at a small expence, with no inconvenience: in fact, four planks will be sufficient to construct it.

ANOTHER method, which I am now going to mention, was long since proposed by that most worthy character and generous philanthropist the late Colonel ROBERT KYD, but I rather believe never put in practice.

It is simply to bore seven or eight holes, on each side of the ship, in the plank that covers the gunwale, (by ship-builders called the plank-shear) about the size of the bung-hole of a but, which will undoubtedly give vent to all the foul air which is generated in the space between the outer and inside plank, and consequently all the lower parts of the ship, where the foul air is principally produced.

By introducing a free circulation of pure air, this contrivance may probably be of great service, in preserving the ship's (frames or) timbers; and most assuredly will be of the most essential service to the ship's company. For I believe, it is generally admitted, that foul air is very prejudicial to the health; and how far it may conduce to that most dreadful of all disorders, on board of a ship, the scurvy; the medical gentlemen are the most competent judges.

THE above holes in the gunwale plank, ought to be surrounded with a ledge, or coomings, about half an inch high, to prevent any water upon the gunwale going down, and also a plug, with a shoulder to it, like the tompion of a gun, to shut the holes when the sea is high: indeed even then, it will only be necessary to shut the weather ones, which I am of opinion should never be open, as the foul air, rising to windward,

windward, may prove hurtful to the crew upon the upper deck, and I have no doubt that the lee ones will be perfectly sufficient to ventilate my ship, especially if the tube I formerly recommended, in the after part of the main hatchway, or pump well, be fixed.

To obviate any objection to boring the above holes in the gunwale plank, I have consulted professional men, who declare that it by no means hurts or weakens the ship.

As a strict attention to the cleanliness of the ship, and ship's company (as well as pure air) is absolutely necessary to preserve the crew in health, I hope you will impute to the real cause, viz. a sincere desire to add to the health and comfort of my brother seamen, my now troubling you with the above, and likewise adding the following Extract (from the Bengal Hircarrah of the 27th September,) which probably may not have come to your knowledge.

To seamen it will be a most valuable receipt, as it supplies in any quantity, a stock of fresh-water, to wash their linen.

*" To render sea water capable of washing linen: by Doctor
" MITCHILL, of New-York.*

*" DROP into sea water a solution of soda, or pot-ash, until
" it becomes milky, in consequence of the decomposition of
" the earthy salts, and the precipitation of the earths."*

*" This addition renders it soft and capable of washing its milkiness
" does no injury, and need not be minded."*

And sincerely wishing you success in your humane undertaking.

I remain,

DEAR SIR,

CALCUTTA,

Your most obedient Servant,

November 6, 1803.

(Signed) JOHN WRIGHT.

To Doctor WILLIAM HUNTER.

HAVING, previously to the receipt of this letter, shewn the description of the air-tube &c. at page 19, to Mr. PAUL TATE, whose skill in practical mechanics, and experience in ship-building, entitle his opinion to the greatest authority, I had the satisfaction to find him coincide with

with the sentiments there delivered, respecting the usefulness and practicability of those contrivances. At the same time, he pointed out the advantage, in point of durability, which the timbers would derive from the extraction of foul air, and remarked the propriety of keeping shut the weather vents, to preserve the crew on deck, from emanations discharged by them.

He afterwards favored me with the following paper, containing a very essential improvement on the scheme.

Memorandum of a plan for extinguishing fire in ships, and rendering them less liable to foundering; also for preserving the Timbers, and to prevent foul air engendered in the hold being inhaled by the Crew.

1. It is proposed, to make the space betwixt the orlop deck and the outside plank air-tight, so that the impure air may be entirely discharged through funnels to extend from the hold to the under side of the gunwale through the outside plank. The funnels may be made the most capacious by lining certain spaces betwixt the timbers with tin or sheet copper, in order to form a square or oblong tube; (1) or in ships of war, if pipes were fixed close to the standards, they might be made of any size, at the mouth of which, safety valves must be applied, to extinguish fire, or in extreme bad weather to exclude water. The number requisite will depend upon the size of the vessel, and the nature of her employ, since ships of war and transports will require more ventilation than those of commerce. By this mode of applying them, the valves may be left open in rainy weather, the time when they are most wanted, and the external current of wind would have no effect on the pipes to leeward, while on the contrary, those to windward would admit pure air.

2. To bolt the orlop deck, or make it of sufficient strength to act as a second bottom. The afore-mentioned space being made air tight, the water would be prevented from rising above the under side of the deck. We may conclude that by this plan, vessels might be saved, which would otherwise *founder*; provided the cargo, for the space it occupies, does not

(1) Vessels which have tanks might discharge the foul air through the tube which extends from the top of the tank, through the decks.

exceed a certain gravity (2). In ships of war, this principle may be applied to great advantage, as a considerable part of the weight rests on the upper works, the discharging of which would augment the buoyancy of the vessel, and consequently reduce the strain on the orlop deck, which will float the vessel, as long as it continues secure.

3. FOUL damp air being destructive to wood of every description, this mode of ventilating will probably tend to the preservation of ships' timbers, and likewise prevent the waste, which cargoes sustain by being heated in the hold.

4. When the ship *Mornington* was discharged, the number of rats taken out of her filled not less than fourteen hampers (3). Their putrid stench, so highly injurious to the health of the crew, might have been avoided, by applying the above described dischargers (4).

5. We may ascertain defects or holes in the bottom of vessels, previously to their being sheathed or coppered, in the following manner:—Secure the hatches, and heat the hold with a fire of the smoke of boiling pitch: shut the valves of the air-tubes, and fill the hold with steam, which will find its way through the smallest apertures in the bottom, or in the lower deck. As the air in the hold will be rendered warm previously to the admission of steam, by applying a pipe from the boiler to extend through the bottom of the vessel, there will be nothing to apprehend from quick condensation, as a supply of steam may always be obtained to produce the necessary effect.

REMARKS. To those who have examined the present mode of constructing vessels, it will appear that nothing could be worse contrived, for preserving the cargoes and the health of the crew, or for extinguishing fire. For admitting that a vessel's hold is on fire, the apertures betwixt the timbers communicate it rapidly to every part of the upper works. Whereas, the exclusion of air, by shutting the valves, would extinguish the flames.

This plan, will in a great measure remedy the evil effects arising from what has been lately termed “spontaneous ignition.” Four vessels, a few

(2) If the weight of the ship and what she contains, added to that of as much water, as will fill the vacant space up to the lower surface in the orlop deck, do not exceed the weight of that bulk of water, displaced by the vessel sinking to her floating draught.

(3) This information was obtained from the owner of the vessel.

(4) Dischargers, tubes, pipes and funnels, are supposed to convey the same meaning.

years ago in *Bombay* harbour, were burnt, it is supposed, from this cause, and I have understood, that ships employed in the *Baltic* are very liable to the same evil.

THE extra expense will probably not exceed one thousand rupees, for a vessel of five or six hundred tons; and when the plan has had a fair trial, we may expect that the premium of insurance will be reduced, since risks of every description will be diminished, and the proposed alteration will make vessels stronger.

N. B. IT must be understood, that the inventor comprises his plan solely in two points;—1st, for rendering air-tight, all the apertures, parallel with the orlop deck, that the whole of the foul air may pass by dischargers, placed in any part of the hold, through the exterior of the ship;—2d, applying valves to the mouths of the dischargers, to extinguish fire.

THE hatches must consequently be bolted down and made water-tight, to resist the pressure from below, in case of the butt ends giving way, or from any other accident, which will occasion the hold being filled with water.

(Signed) PAUL TATE,
Civil Engineer.

THE tubes carried down into the hold, as recommended by Captain WRIGHT, and Mr. TATE, would serve to carry off the lighter gases, which are generated in that part; but to discharge the air which is vitiated by the respiration of the people, another set of flues would be required, the lower ends of which should open between decks (5).

THE

(5) " When the whole ship's company sleep below at once, which is always the case in harbour, the
 " respirable portion must be very quickly consumed. The scuttles, and sometimes a few ports, are opened
 " for ventilation. But these have their inconveniencies. The man who lies nearest the scuttle finds the
 " current disagreeable, and often shuts it. In harbours locked by high lands, it is a good plan to keep
 " the ship's broad side to the wind, by a spring on the cable. Much however might be done by having air
 " flues, so constructed as to communicate with the upper part of the ship, raised some feet above the
 " gunwale, with scuttles fitted to open, as the wind may be on the beam, or otherwise. The lower end
 " of these ought to come within two feet of the lower deck; by which means the current of air would
 " be diffused abroad, without blowing partially on any particular sleeping place. A very equal circulation
 " would in this manner be maintained, when there was a necessity of laying tarpaulins over the hatches,
 " to keep out rain, or when wind-sails could not be put down to advantage in bad weather. The *Medusa*
 " hospital ship was fitted at *Plymouth* with air-shafts of this description, and, when duly attended, kept
 " the

THE practice of fumigation, particularly with acid vapour, for destroying contagion, has been the subject of warm contention among physicians and chemists of the present day. Let us endeavour to compare, and to appreciate the evidence on both sides of the question.

THE first instance that we have of its employment was by MORVEAU, in 1773, to purify the air in the sepulchral vaults of the church of *Dijon*. He made use of the vapour of muriatic acid. The theory, by which he was led to this practice, turned on these facts:—1st, That all putrid decompositions produce a great quantity of ammoniac. 2dly, That the fumes of muriatic acid would neutralise those of ammonia. Hence he concluded that the vapour of muriatic acid “ might seize the ammoniac, “ which he regarded as the vehicle of the *foetid miasmata*, and thus leave the latter to subside by their own gravity (6).”

In this, it is easy to see much loose reasoning:

1st. The epithet “ *foetid miasmata*, ” seems to take for granted that which is not proved, and which there are strong reasons to believe untrue, that those particles which are offensive to the organs of smell, are the same that occasion fever (7).

THE same thing is assumed in pages 29 and 31.

2dly. THE ammoniac is said to be the vehicle of the miasmata. Does this mean that they are chemically combined? And, if so, how is this proved?

3dly. It is gratuitously supposed that those miasmata, when disengaged from the ammoniac, would be precipitated to the ground. To establish this, it would be necessary to shew that they are specifically heavier than atmospheric air.

MR. MORVEAU succeeded completely in correcting the putrid stench

“ the vessel sufficiently ventilated. We can find no objection, as far as we have conversed with officers, “ to their general introduction through the Navy: they can be so constructed as to be clear of the guns and “ ropes; and when we consider the great advantages of pure air to life and health, we ardently wish to “ see the trial. A ventilator constructed nearly on these principles may be seen on board the *Bayseur*, “ the contrivance of Rear Admiral COLLINGWOOD; and the Admiral, with great justice, attributes a “ large share of the improved health of his ship’s company, to this flue, for conducting from the “ lower parts of the deck, the air vitiated by respiration. TROTTER’s *Medicina Nautica*, Vol. III, “ page 284.”

(6) MORVEAU on purifying infected air, page 27.

(7) See the writings of Dr. MITCHILL, and the Thesis of Dr. SALTONSTALL *Med. Naut.* Vol. II, Appendix.

in the church (8), and in the jails of *Dijon*, in which last a contagious fever prevailed (9). But we have no information of any disease proceeding from the first, or any particular account what effect the process had in checking the infection in the second. It is merely said to have been performed "with the greatest success."

THE Experiments XXIII, and XXXIV (10), wherein the fumes of the mineral acids destroyed the odour of air impregnated with the effluvia of putrefying substances, rest on the same principle; which is directly asserted in page 91, that "to destroy the odour is to destroy the danger."

Of a tendency similar to these are the experiments of Dr. CRAWFORD, in the *Philosophical Transactions*, volume LXXX, on the effect of the concentrated nitrous and oxygenated muriatic acids, in correcting the foetor of the matter of cancerous sores, of water which had stood over putrid flesh, and of air which he calls animal hepatic, obtained by distillation from putrifying animal substances.

THE Experiments II, III, IV, and V, discover, in air corrupted by putrefaction, a power of reducing metallic oxides; and therefore, to correct it, we must use the most powerful oxygenants (11). But are the vapours of the mineral acids of this description? Dr. PRIESTLEY (12) and Mr. KEIR (13), say that vital air, or oxygen gas, is oxidized. But MORVEAU concludes, from his twenty eighth experiment, that air which receives the vapour of nitric acid, during distillation, is deprived of part of its oxygen, and consequently rendered worse than before (14). Therefore it could not, in his opinion, answer the proposed indication.

DR. KEIR is inclined to believe in the efficacy of the acid fumigation, because mineral acids are known to destroy all animal and vegetable fermentations, by some modification of which he presumes the matter of contagion is produced (15).

WITH respect to the oxygenated muriatic acid, in the state of gas, we

(8) MORVEAU, l. c. p. 29.

(9) Ibid. p. 30.

(10) MORVEAU, p. 111—123.

(11) Ibid. p. 103.

(12) PRIESTLEY on Air, in three vols. vol. III. p. 4.

(13) MORVEAU, p. 61, 64.

(14) Ib. p. 118, 147.

(15) MORVEAU, p. 64.

have, from Citizen CHAUSSEUR, another mode assigned, by which it may counteract contagion, that is, by its stimulus augmenting vital action, and thus enabling the system to resist the debilitating power of miasma (16). And the observation of M^r. MAGENNIS (17), that persons exposed to the vapours of nitric acid, felt an extraordinary increase of appetite, appears to evince in it a similar power. But some of Dr. TROTTER's correspondents observed from it a very different effect, loss of appetite, languor, and depression of spirits (18). These facts may perhaps be reconciled, if we take into consideration that the last effects were produced by repeated and long continued application of the gas, when the vital power may have been too much exhausted by its action.

ONE fact remains, which serves to demonstrate that the mineral acids, or at least one of them, can render innocuous even specific contagions. "M^r. CRUIKSHANK used to inoculate two subjects with a portion of "variolous matter, after mixing it with oxygenated muriatic acid; the "infection produced no effect, while the other portion communicated the "variolous eruption (19)."

THE next remarkable occasion whereon these vapours were employed, was in the clearing of the prison and hospital at *Wincchester*, of a contagious fever, which had broken out among the *Spanish* prisoners, and proved fatal to many. Dr. JAMES CARMICHAEL SMYTH, to whom that task was committed, says, that "after the most deliberate reflexion on the nature "of putrid contagion, he was satisfied that nothing could so certainly, "or efficaciously destroy it, as the mineral acids in a state of vapour (20)." He does not detail the chain of reasoning which led him to this conclusion; in conformity to which, he fumigated the prison wards, in the following manner: "The wards, when dry, were closely shut up, and "pots placed in them, at different distances, containing from half a pound "to a pound of nitre, which was deflagrated by an iron heater, put into "each pot. The wards were then shut up for some hours, and when

(16) MORVEAU, page 122.

(17) SMYTH on Nitrous vapour, page 190.

(18) See *Medicina Nautica* Vol. II. page 235, 240, &c.

(19) MORVEAU, page 210. *Annales de Chimie*. Tom. XXVIII, page 271.

(20) SMYTH on Jail Distemper, page 54.

" opened, were exposed to a free ventilation (21)." N. B. Some inflammable substance was no doubt mixed with the nitre, though not mentioned in this description. He says the success attending this process here, as well as afterwards in private, and at the *Middlesex* hospital, convinced him of the power of the nitrous acid, in destroying contagion. The rapid diminution in the number both of the sick and of the deaths, after Dr. SMYTH commenced his operations at *Winchester*, exhibited in the table, page 225, bears ample testimony to the efficacy of the means which he employed. But it must be observed, that he introduced a much freer ventilation, with many improvements in point of cleanliness, and assigned more spacious apartments to the sick (22). And he seems afterwards to have discovered that his success was owing to these precautions, rather than to the nitrous vapour. " A farther acquaintance with chemistry convinced
 " me of my mistake, and that the deflagration of nitre never produced any
 " nitrous acid. It is therefore evident, that deflagrating nitre in the pri-
 " son and hospital wards at *Winchester*, could have no effect in destroying
 " contagion, and no farther effect in purifying them, but so far as it fur-
 " nished a quantity of oxygene, or air much purer than the common air
 " of the atmosphere (23)."

So far the reasonings in favour of mineral acid vapours, as correctors of contagion, are chiefly theoretical, and appear not very conclusive. But the evidence drawn from the experiment made on board the *Union* hospital ship, is more of a practical nature. On the first day of fumigation, the offensive smell of the wards was immediately destroyed (24). And Mr. BASSAN's letters (25), together with his returns of the sick (26), shew that a much smaller number was taken ill after, than before the fumigation commenced; and that the disease was also treated more successfully. Nor does it appear, from those returns, that the infection was on the decline, or spontaneously wearing out, when those operations were begun. So that the only cause of uncertainty, respecting the efficacy of the nitrous vapour,

(21) SMYTH on Jail Distemper, page 59.

(22) Ibid. page 56—63.

(23) Ibid. page 174.

(24) SMYTH on Nitrous Vapour, page 62.

(25) Ibid. page 72, 73.

(26) Ibid. page 101—105.

appears to be the effect which we may ascribe to the good practice which we have seen, by Dr. SMYTH's own confession, caused a deception of this kind at *Winchester*. The body-clothes and bed-clothes, after being fumigated, were washed; due attention was "paid to cleanliness and ventilation (27)," and a very essential reform was made in the situation and care of the necessaries (28). Hence a doubt may arise, whether the good effects, ascribed to the nitrous vapour, were not really produced by these improvements. And the same remark applies, with greater force, to the case of the *Russian* ships, on board of which fumigation was practised; as a degree of filthiness had prevailed there, which would never have been tolerated in a *British* man of war.

MR. PATERSON's letter (29) shews a great diminution in the number of deaths, in *Ferton* hospital, after fumigation with nitrous vapour was begun there, and the cases subjoined seem to evince its salutary operation on foul ulcers. He adds however (30), "that without the most strict attention to cleanliness, and to the circulation of pure, or atmospheric air, neither the nitrous vapour, nor any thing administered with similar intentions, can prove efficacious." In page 146, the same gentleman gives three cases, shewing the efficacy of nitrous vapour in whooping cough.

MR. MCGREGOR, in a contagious fever, which affected the 88th regiment at *Jersey*, found that after he fumigated with nitrous vapour, not only fewer were taken ill, but also the virulence of the disease was greatly diminished (31). The same gentleman, soon after, observed the efficacy of nitrous fumigation, in destroying dysenteric contagion (32).

MR. HILL gives an account of the efficacy of nitrous fumigation, on board the hulks and hospital ship, in *Longstone* harbour (33). It had also a good effect in ulcer (34).

MR. GRIFFIN adds his testimony in favour of this process in eradicat-

(27) SMYTH on Nitrous Vapour, page 60.

(28) Ibid. page 63, 66.

(29) Ibid. page 117, 123.

(30) Ibid. page 133.

(31) Ibid. page 154.

(32) Ibid. page 157.

(33) Ibid. page 166, 177.

(34) Ibid. page 171.

ing the contagion of fever in *Porter* hospital (35). But it must be observed, that in one of the instances (that of the *Elephant* prisoners after they were taken out of the hands of the contractor) other very important improvements, in cleanliness and ventilation, were introduced.

Mr. GLEGG says thirty were taken with fever, on board the *Elephant*, a hulk, in the first week, and only three the second; which remarkable difference he ascribes to the nitrous fumigation (36). He also thinks the disease was rendered milder by its use.

Mr. MAGENNIS found a putrid fœtor to be completely removed by nitrous fumigation; and at the same time, the persons exposed to it experienced a great increase of appetite. He also thinks it prevented the contagion of a typhus fever from spreading (37).

Mr. SNIBE, surgeon of the *Sandwich*, ascribes the success, in subduing a contagious fever, which raged on board of that ship, to "cleanliness, " free ventilation, and the diffusing daily the nitrous gas through every " part of the ship." Having collected the breath and perspiration of patients in typhus fever, and added an acid to it, he perceived an effluvia, whence he concludes those excretions to be of an alkaline quality (38).

Mr. BLATHERWICK thinks the hospitals at *Farham* were kept clear of contagion by the diffusion of nitrous vapour, that the surgical wounds were kept sweet by it, and that during its use, fewer patients with extensive ulcers became hectic (39).

CAPTAIN LANE is convinced of its efficacy, in subduing contagion, on board the *Prudent* (40).

Mr. BROWN, surgeon of the *Royal Sovereign*, thinks it an elegant, ingenious and useful fumigation for a sick room. It evidently freshens the air, and he does not observe any particular irritation of the lungs from its use (41).

(35) SMYTH on Nitrous Vapour, page 178, 185.

(36) Ibid page 186.

(37) Ibid. page 189, 192.

(38) Ibid. page 195 &c.

(39) Ibid. page 202.

(40) Ibid. page 205.

(41) Ibid. page 206.

MR. FARQUHAR, of the *Thefeus*, found it to destroy the smell proceeding from foetid ulcers (42).

MR. MOFFAT, surgeon of the *Triumph*, says, he fumigated the ulcers, morning and evening, with considerable success (43). But on farther experience, he retracts this testimony almost *in toto* (44). The good effects which it had at first, in mending the quality of the discharge and promoting cicatrization, were lost on a farther continuance of its use. In these respects, its operation appears to be similar to that of other stimulating applications. Even in this place, Mr. MOFFAT bears evidence to its efficacy in sweetening the air of the sick berth.

DOCTOR WITHERING thinks the use of nitrous vapour, in every instance of its adoption, stopped the infection of typhus, at *Birmingham*. But he owns they seldom see much of it there (45).

ON the other hand, Doctor TROTTER opposes this practice, on the following principles.

1st. THAT as the doctrine of contagion proceeding from animalculæ is exploded, therefore it cannot be destroyed by fumigation (46).

THIS conclusion does not follow from the premises. We have assigned above, from KEIR, CHAUSSIER, and CRUIKSHANK, various modes, in which the mineral acids may counteract a morbid virus, without having recourse to animalculæ.

2dly. THAT the air, extricated by Doctor SMYTH's process, is azotic gas, or nitrous gas, or a mixture of both (47); and consequently must render the air, with which it is mixed, less fit for respiration. It must therefore dispose the body more to receive infection, because it weakens the powers of life (48).

WE have seen above, that the experience of MORVEAU is at variance with that of PRIESTLEY and KEIR, on the question whether the air which receives the nitrous vapour is improved or rendered worse. But it is certain, that unless the process be conducted in a vessel of metal, nitrous gas is not disengaged.

(42) SMYTH, l. c. page 212.

(43) Ibid. page 213.

(44) TROTTER's *Medicina Nautica*, volume II, p. 187.

(45) SMYTH l. c. page 215.

(46) *Medicina Nautica*, vol I, page 231.

(47) Ibid. vol. I, page 230, 239.

(48) Ibid. vol. I. page 233.

3dly. THE experiment on board the *Union* was a deception, from first to last. The disease was wearing out; all those who were disposed to receive infection having already been subjected to it (49). And so far as the means employed were successful, that success was owing to superior cleanliness and ventilation, not to fumigation (50). The same remark is applicable to the reports of the other surgeons in Doctor SMYTH's collection (51).

4thly. THE correction of fœtor is no proof that contagion is subdued (52).

5thly. FUMIGATION is unnecessary, as the infection of fever may be eradicated without its use. Of this many instances are given in all the volumes of *Medicina Nautica*, and the means are thus enumerated: "the immediate removal of the sick, cleanliness in person and clothing; " fires, to keep the people, in the winter season, warm; avoiding cold " and moisture, fatigue and intoxication, and keeping the ship dry, " and properly ventilated (53)." See, to the same purpose, volume III, page 213, where to the means above enumerated are added, "cheerful exercises or amusements, food easy of digestion, and wine if necessary."

6thly. FUMIGATION is ineffectual, as the infection of fever continues to spread, during its use. This happened in the *Centaur*, and the disease was at last subdued by a fresh supply of clothing and bedding (54). In the *Saturn* (55).

7thly. FUMIGATION, independently of its vitiating the air, and thus inducing debility, is hurtful, because;

1st. THE people are kept on deck, during the process, exposed to the inclemency of the weather (56). (N. B. This is not applicable to Doctor SMYTH's process, which does not require the removal of the people.)

(49) *Medicina Nautica*, Vol. I. page 231, vol. II, page 41.

(50) *Ibid.* Vol. III, page 235.

(51) *Ibid.* Vol. III. page 145.

(52) *Ibid.* Vol. III. page 294.

(53) *Ibid.* Vol. I, page 225.

(54) *Ibid.* Vol. II, page 241.

(55) *Ibid.* Vol. III, page 55, 148.

(56) *Ibid.* Vol. I, page 223.

2dly. It diverts the attention of the attendants from cleanliness and ventilation, and from the early separation of the diseased, which thus come to be neglected (57).

HAVING thus endeavored to sum up the evidence on this important question, we leave the reader to judge for himself. He will perceive much inconclusive argument, on both sides; and considerable discordancy in the result of the experiments, both chemical and clinical, as reported by different observers. The former are of a delicate nature; liable to vary from minute differences in the manipulation; and, with respect to the latter, the passions of the observers appear to have been too much engaged, to allow an impartial report.

(57) *Medicina Nautica*, Vol. I, page 223. Vol. II, page 56. Vol. III, page 236.

APPENDIX No. XVI.

NARRATIVE of the voyage of the Althea, from Bengal to England, and back to Bengal, in 1802 and 1803, as far as regards the health of the Lascars.

BY CAPTAIN ARUNDEL ROBERTS.

I LEFT Bengal river in the *Althea* on the 17th of April 1802. The ship's company, consisting of the commander, four officers, one gunner, eight *European Portuguese*, and eighty five lascars, were all able to do duty, except one man, who was much troubled with the rheumatism. The state of the weather, till we got into the South-East trade, was very variable; at times blowing hard; very gloomy, with frequent squalls and heavy rains; in my opinion very apt to sow the seeds of sickness among lascars, who have not, like *Europeans*, the opportunity of changing, when they get wet. We had tolerable weather through the trades, until the 20th of June 1802, in latitude 30° South, and longitude 42° East, when we experienced a gale of wind for forty-eight hours. From the above time, till the 9th of July (on which day we rounded the *Cape*) had bad weather, and almost a constant gale; the people much harrassed night and day. The weather was very cold for a lascar's constitution. Many of them troubled with colds and bad coughs, but all, except two or three men, doing duty.

AFTER rounding the *Cape*, the weather became fine, and continued so till our arrival at *St. Helena*. I now observed the people in general did not look so healthy, and were not in such good spirits, as before the bad weather. Seven or eight of the lascars shewed symptoms of the fever, and one of the *European Portuguese* had a bad dysentery. We arrived at *St. Helena* the 24th July, and sailed the 31st. During the short time we remained there, I sent all the sick, and those not in perfect health, on shore, with an officer, every morning at day-light, to gather water cresses and purslane for the ship's company. They returned to their meals, and were regularly sent on shore again, to wash the people's clothes, and themselves, in the running stream, three or four times in the day.

This

This had so good an effect, that, when I left *St. Helena*, I had only one man sick, who afterwards died of a confirmed lues venerea.

ARRIVED at *Deptford* on the 16th of October. Two men had died on the passage, four were unable to do duty, and ten or twelve more affected with the scurvy.

THE most prevalent disease was scurvy. The recovery of the patients, after our arrival, both on board and on shore, was very rapid; which I chiefly attribute to their eating fresh vegetables.

THE people who remained on board, certainly retained their health better than those on shore. The reason, in my opinion, is this, the former get scarcely any spiritous liquor, while those on shore drink to excess.

THE diseases most prevalent among the lascars in *England* were colds, coughs, dysenteries and rheumatism. These complaints were owing to the climate and their own want of care. If they put on the warm clothing provided for them, their jackets would be all unbuttoned, and their stockings down to their heels: consequently their breasts and legs were exposed to the cold.

FOUR lascars died in *England*, and I shipped seven. Shipped also twelve European seamen. The pilot left us, outward bound, on the 2d of January 1803. The number on our sick list, at the time of sailing, did not exceed three or four men, and those soon recovered on going to sea. After being twenty days at sea, near the *Cape de Verd* islands, in fine clear weather, but hot, several were affected with slight bilious fevers, which rapidly increased. On the twenty-fifth day, six people were sick of this complaint. The number increased, in twelve days, to twenty-one. During the space of twenty-four days, there were sometimes eighteen, sometimes twenty-two, on the sick list; and in the meantime seven died of the fever.

BEING now in latitude 26° South, the air became cool, which seemed to have more effect than medicine; as the number of sick rapidly decreased.

WE touched nowhere outward bound, and arrived in *Calcutta*, on the 8th May 1803. Three or four lascars were not very well, but none were on the sick list. The chief indisposition was scurvy, and the most indolent people, whom we generally call dandies, were the most affected

with it. On our arrival, the ship's company went on shore, and I saw no more of them.

ON the voyage from *Bengal* to *England*, I had the following provisions for the lascars, besides their usual poor diet of rice, dâl, and ghee.

Twenty bags of wheat.

One hogshead of melasses.

One ditto vinegar.

One ditto preserved tamarinds.

One ditto of pickled capsicums, onions, and garlic: one half capsicum, the other half an equal quantity of garlic and onions: the cask filled with good vinegar. It was fit for use in a few days.

One hogshead of pickled limes.

Two casks of salt-fish. They were soon expended.

Two maunds of mustard oil, for oiling the people.

One keg of lime juice.

Two butts of rum.

THE pickled capsicums, &c. I had ground up together, and boiled with the dâl, separate from the rice. It made a good palatable dâl curry, of which I have often eaten myself. The people had for one meal, every day, boiled wheat with melasses.

I NEVER gave lime-juice daily to any, except those in whom I discovered symptoms of the scurvy; but preserved limes and tamarinds were issued daily to the crew. I never tried the vitriolic or nitric acid. I frequently gave them spruce beer, of which the lascars are very fond.

THE lascars' allowance while in *England*, was half a pound of mutton per-day, and as much vegetables and small beer as they chose.

OUTWARD bound, each lascar had daily one pound of potatoes. I never debarred them from smoking.

IN my opinion, nothing is so conducive to the health of the people as change of diet: where it has been often changed, I have observed the ship's company remarkably healthy. I would propose ships to carry wheat and Indian corn, as well as rice and dâl. I always had wheat with me; and were lascars dieted in the following manner, I think the good effects would be soon seen. Let them have two meals of rice, dâl and ghee; one of boiled wheat and melasses, or Indian corn and melasses,

or a meal of each per day ; continue this for some time, then give them their accustomed food, (which on board a ship is nothing but rice, oil and ghee) for eight or ten days, and then nothing but wheat and Indian corn with melasses for four or five days, then put them to the two meals of rice and one of the other kind again. They may go through these changes every month. Outward bound, give them plenty of potatoes. I brought with me from *England* ten tons, and by frequently picking and airing them, they kept nearly all the way out.

THE ship was well ventilated, and the crew always kept clean. The people were divided into two watches. Those who had the morning watch were regularly washed every morning, if the weather would allow it. In cold or wet weather, the people were made to oil themselves with mustard oil, to which a proportion of rum was frequently added. It gave a glow to the skin and kept them warm, and the oil prevented the water from penetrating the skin, in heavy rains.

In cold and wet weather, the lascars were clothed in a banian, drawers and socks, made of *Patna* blanketing, over which they had a pair of cloth trowsers, and a cloth jacket lined with blanketing, long enough to reach over their loins ; a cap and pair of shoes. In fine weather they wore their own common lascar's drefs.

THE symptoms of the scurvy were, first swellings in the feet and legs, increasing upwards ; a dent remaining on the swelled part, where pressed by the finger. The gums foul, the eye languid, and the whole of it yellow ; a great indolence and inactivity in the patient. I have, in a few cases, known the mouth affected in a slight degree, before any other symptom shewed itself, and in many cases when the other symptoms were but very slight. This affection of the mouth generally took place, as soon as the swelling of the legs and feet and dimness of the eyes.

I NEVER observed the skin to be affected with red spots ; but frequently scorbutic ulcers broke out upon the shins and ankles.

I NEVER observed the patients complain more at night than in the day, of pains in their limbs ; but they always felt a pain and stiffness in their knees, when they moved after sitting some time still. I always found those in the scurvy able to do some duty, except during the period of five or six days, when the disorder was at its height.

I NEVER observed that the moon had any effect on the disease; nor did I ever dissect any of the lascars that died.

THE medical treatment found most successful was the use of vegetable acid. In very bad cases, I have given six wine glasses full of lime-juice in a day. The scorbutic ulcers I dressed simply with lint, dipped in lime-juice, and secured by a tight bandage. For the swellings, I used a poultice of raw potatoes and turmeric, with lime-juice or tamarinds; but previously to the application of the poultice, I steeped the feet and legs in warm water. This plan was generally successful. By the internal use of lime-juice, and frequently washing the mouth with vinegar and water, the disease, which had manifested itself by a slight affection of the mouth, was often cured without advancing any farther. Under this treatment they recovered speedily, being seldom ill more than three weeks.

I ONLY used laxative medicines, sufficiently to keep the body open.

THE signs of recovery were a gradual decrease of the swelling, the eye becoming clear, the mouth clean, the patient active and cheerful. The appetite increased much during convalescence. Though the scurvy was the most prevalent disease, I never lost but one man in that complaint, and he seemed differently affected from the rest. His feet and legs were hard, and reduced from the natural size; the sole of the foot dry and parched; and the patient walked with pain. His face was swollen, his eyes and mouth as above described. As I observed he breathed with difficulty, I attempted to bleed him, but could draw no blood. He died suddenly, as I was preparing a warm bath for him.

I KNEW one instance of a violent dropsy, succeeding the scurvy. This happened up the *Red Sea*, and I ascribed it to the patient's taking a large quantity of lime-juice in too short a time, which impoverished his blood. This is the only instance, I ever knew, of the dropsy among lascars. I treated it in the following manner:—I scarified the patient, confined him in a warm place, gave twenty drops of laudanum, and forty of antimonial wine, every morning and evening, to keep up a constant perspiration. He perfectly recovered in nineteen days. Towards the end of his illness, I made him use gentle exercise.

In the bilious fever, I used calomel and jalap. emetic tartar, and warm baths.

THE above are all the observations I have made respecting Scurvy; and I shall feel myself happy if they shall be found to contribute any thing towards preserving the health of that useful class of men, on long voyages.

(Signed) ARUNDEL ROBERTS.

CALCUTTA, *March* 20, 1804.

APPENDIX No. XVII.

I HAVE been favoured by Captain RATTR, of the Honorable Company's ship *Earl Spencer*, with the following particulars, respecting the scurvy alluded to in page 41, which prevailed on board that vessel, on the voyage from *England* to *Bengal*, in 1800 and 1801.

IN three months and a half after leaving *England*, there were slight appearances of the disease. The weather, till then, had been remarkably fine: one month after, on approaching the *Cape*, it was cold and moist; and the number of sick increased progressively, until the whole ship's company became affected. When the pilot came on board, off the *land heads*, in the beginning of January 1801, only five seamen were able to do duty, and those were considerably affected with the distemper. Even the petty officers had not escaped. Forty-six men were confined to their hammocks, as helpless as children. Yet the officers and passengers were all in perfect health.

THE progress of the symptoms was as follows: swelling of the legs, bearing the impression of the finger; black and blue spots, on the legs, very fiery when they broke out into ulcers. Sometimes, in the later stages, the limbs became all black: muscles of the legs of a stony hardness and much contracted; joints stiff, which soon rendered the patients incapable of walking. The gums very sore, and bleeding frequently. Great difficulty of breathing and lassitude, so that the patients were ready to faint on being moved in the least in their hammocks. Yet not a man died; and they recovered rapidly after arriving in *Bengal*, where they were plentifully supplied with soup and vegetables. Captain RATTR is not acquainted with the medicines given them during the voyage, and believes that latterly none was administered: but they had nourishing diet, and a great deal of port wine. But no one was enabled to return to duty, before the ship's arrival in port. There was no lemon juice.

THE seamen's diet was beef and pudding four times; pork and peas three times a week. For the first thirteen or fourteen weeks had one
banian

banian day, fish and potatoes, with mustard, oil, vinegar, and pease soup. The allowance of liquor is a dram, and on Sunday a pint of grog; but served them extra grog in warm weather, and drams in cold, when occasion required.

THE seamen were all berthed on the gun-deck, where they had plenty of room and air, and the greatest attention was paid to keep it clean.

MANY of the crew had lately returned from sea when they embarked again on this voyage. Captain RAITT has observed that foreigners, particularly *Danes, Swedes and Dutchmen*, in our ships, are generally the first attacked; being, unless well looked after, more gross in their living, and dirty in their persons, than *English* seamen.

ON the voyage of 1800 and 1801, the ship touched no where; but in 1803-4, was a month at *Rio de Janeiro*. The fruits and other refreshments obtained there, rendered the ship's company more healthy than when they left *England*; and they were exempted from sickness during the remainder of the passage.

CAPTAIN RAITT says, nothing appears to him to have so good an effect as lime-juice, mixed in a certain proportion in their drams, or occasionally made into punch. If given early in the voyage, he thinks it will, in a great measure, if not entirely, prevent the attack of scurvy, and enable the ship's company to perform their voyage without going into port.

APPENDIX No. XVIII.

I HAVE been favoured by Mr. W. Knox, who came out a passenger on the *Anna*, Captain GILMORE, from *England*, in 1800, with the following account of a disease which prevailed on board of that ship, exactly resembling that described in Appendix No. I. The medical knowledge of Mr. KNOX, gives a peculiar value to these observations, by establishing the absence of certain symptoms, which might be supposed to have been overlooked, by those observers who are unacquainted with the profession.

“ THE *Anna* is of burthen from 600 to 700 tons. Her crew, at the time of sailing from *Portsmouth*, about the 21st of November 1799, consisted of the commander, officers, and five *Europeans*, about fifty lascars, and forty-five *Malays*. There were three passengers. Most of the lascars were entertained in *England*, for the ship having made a voyage, as a transport, to the *West Indies*, had changed the greatest part of her original crew. The *Malays* were taken, in the Channel, from on board a *Danish* ship, which had been stopped by a man of war, on suspicion of carrying a *Dutch* cargo from *Batavia*. They were sent on board the *Anna*, for the purpose of being conveyed back to *India*.

“ We were out upwards of three months before the disease appeared, except in the case of an old *Malay*, who had symptoms of it in about two months. He was the oldest man on board.

“ The disease first shewed itself by swellings in the lower extremities, gradually mounting upwards; affecting the legs, thighs and abdomen. When it reached the thorax, it speedily terminated in death, the approach of which could always be foretold by what the patient described as a burning heat at his heart. The face was, at the same time, swelled, with a chalky leucophlegmatic appearance. The swellings, particularly of the lower extremities, pitted much, and retained the dent when pressed. There was no affection of the gums, nor any ulcers. As the disease was stated to be scurvy, I looked particularly for these symptoms, and fully satisfied myself that they were not present.

THE

“ THE disease generally terminated fatally in a period from eight to ten days, unless arrested by spruce beer and potatoes with vinegar.

“ WE touched at *Madeira*, but had very unsettled weather there, so that the people had few or no refreshments. The ship was not more than forty-eight hours at anchor, but this occasioned a delay of three weeks in our voyage, having been blown out in a gale of wind ten days.

“ AFTER that we had very good weather till after passing the northern tropic, when it became wet and close till we had got beyond the line.

“ THE disease commenced during that close and damp weather on the line. It moderated as we got into a higher latitude and drier air; and, by the time we reached *Madras*, very little appearance of it remained.

“ I CANNOT exactly recollect the number of deaths, but think about four or six lascars, and eight or ten *Malays*.

“ WE arrived at *Madras*, about the 11th of April 1800, and at *Bengal* a month after.

“ WE had very few sick on arriving at *Madras*, and none after leaving it.

“ THE diet of the lascars and *Malays* was rice, *Lurpe* salted butter, and a small allowance of salted herrings.

“ THE people had little or no clothing: what rags they had were old and filthy; so that notwithstanding Captain GILMORE's great attention, it was impossible to keep the people clean.

“ THE *Malays* had concerted a plan to murder all the *Europeans*, and carry the ship to *Batavia*. It was providentially discovered by one of themselves; most providentially, because the poor man died three days after, and on the very day the act was to have been perpetrated. He died of the disease above described, as I judged from the great pain and burning heat at the pit of his stomach. It was acute, and a blister was applied to it, without relief. We had even conjectures of poison; but as we took care, immediately on his making the discovery, to separate him from his countrymen, they could have had no opportunity of giving it. He had much fever, perhaps owing to the agitation of his mind. At that time I did not understand any thing of the nature of the disease, and consequently he might have had the anasarcaous symptoms unobserved. His disease was more acute than in any after instance. He was a poor debilitated subject, rather old.

“ It may be worthy of observation, that we inspired this poor fellow with saving us to a principle of gratitude. He had been frost-bitten and lost most of his toes. Captain GILMORE was very humane towards him, and I used to dress his sores. Thus even the most savage minds may be subdued by kindness. This cannot be a solitary instance, and though it must be confessed they are very rare in people of that country, yet they are sufficient to encourage us on all occasions to use them kindly.

“ THE chief medicine, which was used on board the *Anna*, was calomel; in such doses as to purge; but it was never pushed the length of affecting the mouth. From this medicine benefit seemed to be experienced, or rather relief of symptoms. But the œdematous swellings, which constituted the principal symptom, seemed to be more effectually arrested in their progress by the use of fermented liquors, spruce-beer, porter, and most effectually by wine.

“ THIS disease seems to have been the same as that described by your correspondent at *Ceylon* under the name of *Beriberi*. The symptoms in which there appears to have been the greatest difference, are the dyspnoea and the spasmodic affections; these latter being entirely wanting in the disease on board the *Anna*, and the former existing only in a very slight degree: neither had we vomitings nor violent head-ach. The burning heat, referred to the scrobiculus cordis, which was a fatal symptom with us, seems to have been less noticed in the *Beriberi*. From the commencement of this symptom, the patients seldom survived more than eight or ten hours. They generally went off quietly, often in their sleep.

“ THERE seems to be a very great coincidence in the causes assigned for both diseases, viz. a low poor diet and exposure to wet. It may be worthy of remark, that despondency, or the influence of the depressing passions, seemed to favour the operation of the other causes. The Malays on board the *Anna*, confined for their attempt to cut off the ship, and under dread of punishment, were the greatest sufferers. Their confinement and state of inactivity, no doubt, had its share in producing the disease more among them than the lascars. I should not be led to imagine that foul air, in their instance, could be blamed; for they were confined in the open air, in the waist of the ship, and their places carefully cleaned and scrubbed daily. The lascars had a berth under the forecabin, to shelter

thence in a storm rain; and in dry weather, they also lay in the open air, and had no apartments below.

" It appears to me in vain to look for more causes, when adequate and obvious ones appear, which I take here to be, the fumes in the *Berth*, low living, or the want of a sufficiently nutritive and stimulating diet. This, joined to an almost constant exposure to wet, without clothing, to defend against its effects, will sufficiently account for the production of this disease, which is certainly one of mere debility: That wet had a very considerable share in the cause, appeared evident; from the symptoms of the anasarca not beginning to shew themselves, until we were exposed to close wet weather, for several weeks, under the line.

" It may be remarked that this disease seemed much allied to the common sea scurvy, but without its putrid diathesis; as there were no sponginess of the gums, bleedings, nor ulcerations.

" If I might be allowed to hazard an opinion respecting the only cure, which I think must be wholly preventative, I would urge a much freer use of ardent spirits, especially in the form of grog. I have seen good effects from reiterated drams, in supporting the sailors through fatigue, especially in wet weather.

" In confirmation of its efficacy in enabling the natives to undergo fatigue, a gentleman informs me that he has travelled twenty cos, post, with the same set of bearers, by the help of a bottle of country liquor, distributed at proper intervals; which he thinks would have been impossible without such stimulus.

" The whole condition of the native seaman ought to be more attended to, and made more comfortable. In addition to better diet, and such clothing as would be better adapted than the heavy flops from *Europe*, I would recommend plenty of oily, or unctuous substances, by way of rubbing over their bodies. These the sailors will readily use; and they might serve to defend against wet, and perhaps prevent the absorption of so great a quantity of watery particles, into the system by the skin.

(Signed) WILLIAM KNOX.

May 30, 1804.

A P P E N D I X No. XIX.

THE fatal effects which inattention to the health of lascars may produce, not only to themselves, but also to *Europeans* who may be embarked along with them, are strongly depicted in the following narrative, for which I am indebted to Mr. PROCTER, surgeon of His Majesty's 22d Regiment.

“ THE diseases by which the 22d Regiment suffered, on the passage from *England* to the *Cape*, were dysentery and putrid fever, arising from the crew being in a state of disease at the time of embarkation, in January 1800. Five hundred of the regiment were embarked on the *Surat Castle*. The crew, mostly lascars, were in a most deplorable state. These people, when on shore, live very intemperately; and on board, their diet is deficient in nutriment and stimulus, more especially for a cold season, in a cold climate. Their clothing is, in quantity, unequal to the purposes of cleanliness, and the advantage of warm woollen is more than done away, by its becoming a nest for filth, as it is scarcely ever washed or changed. They are averse to all exertion, in situations that most require it. In disease, they despond, and sink under an accumulation of their own filth.

“ I WAS not a witness of the sufferings of the detachment on board the *Surat Castle*, being with another detachment on board the *Minerva*, where, although sickly, we were more fortunate. My account is formed from the assistant surgeon, Mr. HACHING, whose assiduous attentions and exertions, during the whole scene of distress, entitle him to the highest credit and praise. Between the period of embarkation and sailing, (about a month) forty of the detachment were sent to the military hospital at *Gosport*, labouring under fever, with great debility. Twenty were thought sufficiently recovered to be sent back, the day before sailing. At a very early period of the voyage, one third of the detachment, and the greatest part of the crew, were ill of putrid fever, or of dysentery. Every thing was done, that humanity and medical knowledge could suggest;

gill; but under such an accumulation of contagion, medicine is of little avail, and the disease is more easily prevented than its progress arrested.

"Castor oil and jalap were freely and early given; afterwards bark, wine and opium. Blisters were applied, and the sick had the best diet the surgeon would admit. In the dysenteric cases, calomel was given alone, and afterwards with opium. Enemas of starch with laudanum. Fumigations were diligently employed. Before the expiration of the voyage, two thirds of the crew and fifty-two of the detachment had died; and, excepting the officers, scarcely a man had escaped the disease.

"One circumstance deserves notice, as tending to prove the power of mental and bodily exertion, to ward off, at least for a time, the attack of the disease. For the latter part of the voyage, the ship had been worked, principally, indeed almost solely, by the officers of the 221; and during this scene of fatigue and danger, they continued in health. But when the necessity for exertion ceased, by the ship coming into harbour, six were seized with the same disease; one died after four days illness, and five suffered very severely.

"The contagious and malignant nature of the disease will be evident, from its being rapidly communicated to a number of seamen, sent from the ships of war, to assist in working the *Surat Castle* into *Simon's Bay*. To the malady so contracted, several fell victims.

"On the detachment landed from the *Surat Castle*, one hundred died of the same disease, after leaving the ship.

"The voyage was of moderate length, not exceeding three months."

(Signed) GEORGE PROCTER.

APPENDIX No. XX.

FROM the following account, of a distemper which lately prevailed on board the *Stirling Castle*, on a passage from *Bengal* to *China*, communicated to me by Lieutenant HARR, who was a passenger on board, it appears that the prevalence of *Anasarca Cacotrophica* among lascars is not always restricted to *Europe* voyages. The narrative was submitted to Captain HONYMAN, who acquiesced in its accuracy and supplied a few omissions.

“ THE *Stirling Castle* sailed from *Bengal*, on the 6th of October 1803, with about one hundred and fifty people on board, including the commander and officers, passengers, lascars, servants, &c. The weather, going down the Bay, was variable, occasionally wet.

“ ARRIVED, in five weeks, at *Prince of Wales's Island*. There were no sick, except one man who had oedematous swelling of the leg, about the time of making *Acheen*, and another, who died of consumption. Staid three days, to water, and in seven days more reached *Malacca*. About that time, some of the people began to complain. In going in, the ship struck on a bank, so that it became necessary to lighten her, by throwing out the water received at *Prince of Wales's Island*. Water was taken on board at *Malacca*, to supply its place. It was river water, but it is doubtful whether it was filled high enough up the stream to be out of the reach of saline impregnation from the tide: and being carried off to the ship in bulk, in an open boat, it was much exposed to the admixture of sea-water.

“ THE diet of the lascars, allowed by the ship, was rice, dal and ghee. For other articles, such as condiments and salt-fish, they had to trust to their own stores. Most of the people procured yams at *Prince of Wales's Island* and *Malacca*. The seacunnies, who laid in the best stock of these articles, retained their health longer than the others, but were, in the end, equally the victims of disease. The lascars had drams occasionally, after long exposure to wet.

“ THE lascars were badly clothed, and very dirty; even those who had plenty of clothes taking no pains to change them.

“ THE

“ THE weather, from *Malacca* to *China*, was variable, sometimes very hot, and occasionally rainy.

“ THE disease began soon after leaving *Malacca*. The first symptoms were swelling of the lower part of the legs, just above the ankles, bearing the impression of the finger, gradually extending up the thighs, to the belly, chest and head, and attended with great difficulty of breathing. They did not complain of their gums. Many of them were regular in the belly. No extraordinary thirst, till the disease was far advanced. No appetite, but yet no sickness at stomach nor vomiting. Great languor. They laboured under great pain in the chest, and great uneasiness from difficulty of breathing. In no instance, after the disease reached so high, did any one ever recover.

“ THE duration of the disease, when fatal, was various. Some died in a very few days, others held out a month or six weeks. Some of the strongest men were carried off very quickly, while others, to appearance the weakest, survived the longest. It was however observed, that the men who strove to exert themselves held out better and longer than the others. Some whose whole bodies were swelled, survived in that state for a fortnight; in other cases the whole duration of the disease did not exceed twelve hours. Some were, at the time of their death, swelled little or nothing; others to an enormous size.

“ IT was remarked that the joints of those, who had died of this disease, never became stiff, although the bodies were sometimes kept for many hours, from a prejudice which the sailors entertain against burying at night.

“ IN going to *China*, we passed to the eastward of the *Pekow Islands*. About the latitude 13° north, the weather began to get cool, and when we drew in with the coast of *China*, it became cold and raw, with mist, and sometimes rain. This change sensibly affected the people. Yet the greatest mortality was between the Straights of *Maccafar* and the *Pekow Islands*, when the weather was occasionally hot.

“ WE arrived at *Maçao* on the 7th of February, before which about forty sailors had died; and we lost five or six in twelve days after our arrival. Captain HONYMAN, immediately on our arrival, pitched a tent on shore for the sick, who appeared to be benefited by this change of situation. The remaining sick, in number about twenty, recovered, although it rained all the time we were there.

“ The medicines given to the sick, were, bark mixed with beer, which seemed to have no effect; France beer, which appeared to do some good, as some got apparently better under its use, and one man recovered. They also got vitriolic acid. Repeated blisters relieved the dyspnoea in some cases. One man, to all appearance, recovered completely under their use, joined with beer and vitriolic acid; but he afterwards relapsed and died. One man, at his own urgent request, was bled. It did not relieve him, and he died; but his death did not appear to be hastened by the operation. Several of the people, whose legs were much swelled, and destitute of feeling, made incisions, from which issued a ferrous matter. The sick seacunnies had mutton broth, and they had latterly a good deal of wine: but not one of them who was once confined to his bed, ever recovered.

“ We had no limes nor lime-juice, pickles or sour cream. On a voyage which the ship luckily made to *Europe*, she was supplied with preserved limes and lime-juice, and the crew were remarkably healthy.

“ About three weeks before arriving in *China*, Captain Hornman was taken ill. He first complained of weakness in the ankles, which in three days began to swell; and, in the course of three weeks, the swelling had so completely got up his thighs, that he was unable to walk, without support. He had scarcely eaten any solid meat during the voyage.

“ We sailed from *Macao* on the 28th of March. One man, who had been ill during the former part of the voyage, and only partially recovered in *China*, died, after we had been out a fortnight, of the disease above described. All the rest were healthy.

“ Arrived in *Calcutta*, on the 25th of May, having stopped one day at *Malacca*, and four at *Prince of Wales's Island*.

A P P E N D I X No. XXI.

IN No. VIII, of this Appendix, the efficacy of a nutritious diet, in preserving the health of native troops, is strongly exemplified. The following letter from Captain P. GRANT, enables me to present the reader with another instance of a similar nature.

DEAR SIR,

IN answer to your inquiries respecting the state of health enjoyed by the native troops on board ship, on the long voyage from hence to the *Red Sea*, I have the pleasure of stating the following particulars.

I SAILED from *Bengal*, in the *Ganges* transport, of about five hundred tons burthen, on the 15th of November 1800. The detachment under my command consisted of three hundred men, of whom scarcely ten had ever been at sea before; and the ship's company were about ninety: so that, including the troops, followers and crew, we had about four hundred on board. We had no surgeon. The ship had neither ports nor scuttles, and I think the height between decks, where the men were berthed, did not exceed four feet two inches. Windfalls were used, but the sepoys complained that the cold air from them was disagreeable. The decks were sometimes washed, but not so frequently as I could have wished. We had nothing but time to dry them with.

THE sepoys were clothed only in a *Lungotee*, excepting when on duty or parade: the ship's company had the usual dress of lascars. The sepoys had at all times plenty of oil served out to them; and after washing themselves well, they were rubbed with the oil. This I believe was of great advantage.

NEITHER the troops nor lascars had hammocks; they slept either on deck or between decks: some of them slept in the boats.

FOR diet, the troops had rice, dāl, ghee, flour, sugar, tamarinds, choora (rice in the husk, cut before quite ripe, toasted and bruised in a wooden mortar), tobacco to chew and to smoke.

THE lascars were fed on rice, ghee and dāl, with now and then a dram of spirits.

THE first port we made was *Trincomalee*, where we met with a long detention. After a passage of six weeks from that port, we arrived at *Bombay* in March. All this time we had fine weather, with little or no rain. At *Trincomalee* we obtained but poor refreshments; but at *Bombay* got every thing that composes the luxury of a *Hindoo*.

THE people were landed one day at *Bombay*. We arrived at *Mocha* late in April, and at *Coffeir* in May. The people were neither ashore at *Mocha* nor *Jidda*. At the first of these places we obtained no refreshments; but at the second plenty of fruit. After entering the *Red Sea*, we had hard gales. During the last part of the voyage, when the weather was dreadfully hot, the people had a very short allowance of water, and complained much.

UNDER the circumstances above detailed, which seem to be, in many respects unfavourable, both the troops and ship's company enjoyed a high state of health. We did not lose a single man on the passage; and in my whole party I landed only three sick men at *Coffeir*, two of them venereal cases. This I can only ascribe to the excellent and liberal allowance of provisions and luxuries laid in by the *Bengal* government, but in a particular degree to the flour, sugar, tamarinds, ghee and oil. As the *Hindoo*s have a prejudice against cooking rice on water, and we had not fifty *Mahomedians* in our whole number of military, rice or dāl were but little used. Cakes baked of flour, with plenty of ghee; together with sugar, tamarinds and sweet-meats, were the principal diet.

I must observe, before I conclude, that every ship of the *Bengal* volunteers was as healthy as the *Ganges*. But, from causes which I cannot assign, the *Bombay* sepoy's, who had not near so long a voyage as our corps, not only had great sickness in their ships, but lost many men at *Coffeir*, soon after their landing.

Your's,

(Signed)

P. GRANT.

TO WILLIAM HUNTER, Esq.

APPENDIX No. XXII.

FROM, Mr. THORNHILL, *Major-Minister*, and Mr. HUNTER, *Marine-Surgeon*.

TO JOHN THORNHILL, Esq.

Secretary to the Board of Trade.

SIR,

IN conformity to the orders of the Board of Trade, conveyed in your letter of the 1st instant, we have examined the commander and officers of the *Ship Byangore*, regarding their observance of the instructions given to them for the preservation of the health of the lascars, during the late voyage of that ship to *England*, and the success of the plan adopted for that purpose. And we have now the honor to communicate to you, for the information of the Board, the result of our investigation.

The *Ship Byangore*, of five hundred and twenty-four tons, builder's measurement, left the pilot at the mouth of the *Ganges*, bound to *England*, on the 11th of March 1853. Her crew consisted of the commander, three officers, a gunner, carpenter, and four seacunnies, *Europeans*; four seacunnies, forty-five lascars and topasses, natives of *India*. The ship had, on the lower deck, three ports and three half ports of a side; and on the upper deck, a tier of ports fore and aft. The berth of the lascars was between decks, where they had plenty of room, both homeward and outward bound. The ports were always open, when the weather would admit, and windfalls were used at the hatchways.

The upper deck was washed every morning, when the weather would admit, and the lower deck twice a week. After washing, the decks were dried with swabs. No fires or fumigations were used. In damp weather the tween decks was only swabbed, without washing. Homeward bound, the berth of the lascars was washed with vinegar. The beams were never white washed. For diet, the lascars, besides the usual allowance of rice, dāl and ghee, had capsicum, turmeric, onions, methee (*Trigonotis / wingecum*), coriander and cumine seeds, sugar, and tamarinds

marinds, also occasionally tea. Drains were given, not constantly, but only when wet. The following is a list of the provisions taken on board in *Bengal*.

			<i>Maunds</i>	<i>Seer.</i>
February 5, 1803.	21	dubbers of ghee,	44	12
	25	bags fine dâl,	50	0
	15	ditto moong dâl,	30	0
	7	ditto salt,	14	0
	4	ditto sugar,	9	27
	5	ditto chillies,	5	0
	4	ditto onions,	5	0
	1	ditto coriander,	1	0
	1	ditto met,hee seed,	1	0
	1	ditto cummin seed,	1	0
	2	ditto turmerick,	2	0
	3	ditto tamarinds,	5	0
	15	ditto fine rice,	30	0
		Fire-wood,	200	0
	1	box tea,		
----- 21, -----	261	bags provision rice,	522	0
		Fire-wood.	200	0

THE ghee was served monthly one seer per man ; and the other articles of condiment were given out at the same periods, in such quantities, by guess, as were deemed sufficient to last for one month.

THEY had plenty of water, at least two quarts per man daily.

THEY had each a suit of warm clothing, made on board, from stuff purchased in *Bengal* ; part coarse *English* cloth, and part country blanketing. Both kinds appeared to answer equally well.

WHEN wet, they were made to shift these with their own common dress. To ensure their doing so, they were, on those occasions, sent below, with a light, under the inspection of an officer, who saw that they changed their clothes. The chests were frequently brought on deck and examined ; the hammocks were brought up daily, when the weather would permit, opened and aired ; and they were scrubbed twice a week.

Cocoa-nut oil, was supplied, to rub their bodies when they got wet. Three fers of it were put in charge of the serang monthly for this purpose. The chief officer saw it applied. He did not observe any particular effect from it, but the people were fond of the practice.

THE bodies of the lascars were often washed in hot weather. They amused themselves frequently with dancing and various sports.

THE weather, on the passage to *England*, was fine, except six days, off the *Cape*, which were stormy, with rain.

ARRIVED at *St. Helena*, on the 22d of May, and left it the 27th.

ABOUT three weeks before arriving there, (that is, in two months after sailing from *Bengal*) symptoms of scurvy appeared among the crew. And at the time of arrival eight or ten were affected. The symptom first noticed was a swelling of the feet and legs, soft and bearing the impression of the finger. The mouths of people affected in this way being examined, the gums were generally found swelled, livid and bleeding when touched. The commander, being aware that affection of the mouth is an usual attendant on scurvy, looked particularly for it, but he thinks, at the same time, that this symptom arose to such a degree, and proved so troublesome to the patients, that it would have commanded his notice, without such previous knowledge. The joints were stiff, contracted and weak. There were no spots on the skin nor ulcers. The commander and officers were not aware that spots are a symptom of scurvy.

BEFORE arrival in port, the sick had raw potatoes sliced with vinegar. There was no lime-juice in the ship's stores, but Captain BOWEN supplied them with some out of his private stock. This treatment seemed to check the progress of the disease. On arrival at *St. Helena*, the scorbutics were sent on shore to pick water cresses, and they all recovered before sailing from thence. The ship arrived at *Falmouth* on the 29th of July, without a sick man on board. Two men were killed on the passage by accidents, but not one died of disease.

IN *England*, the lascars lived on board, only some occasionally ran away and were caught again. One party, having mutinied and carried off the boat, were on shore for three weeks. Both those on board and those on shore were healthy: the only complaints among them were slight fevers, proceeding from cold (which were easily removed by gentle

cathartics) and venereals. One man, however, who was longer on shore than any of the others, suffered the most of all, from sickness on the passage out.

THEY had in *England* a diet of mutton, with vegetables and beer. Captain BOWEN thinks the proportion of animal food usually allowed in *England* is too great, and that of vegetables too small. He endeavoured, as much as he could, to reverse this proportion, and thinks it had a salutary effect. And Mr. NICHOLLS, the second officer, who was on board the *Marian*, Captain PURRIER, on the voyage of 1802, when that ship, outward bound, suffered much from a fever, observes that the lascars belonging to that vessel had a very full diet of animal food in *England*. This is the only circumstance in which he remarked the condition of the lascars in the *Shab Byramgore* to differ from those of the *Marian*.

IN *England*, discharged four *European* seamen and shipped seven. Five lascars deserted and eleven were entertained.

THE provisions supplied in *England*, for the voyage out, were four tons of potatoes and six barrels of white herrings.

SAILED from *Portsmouth* on the 5th of December. The only complaints then among the crew were a few slight venereals.

THE weather was very boisterous; heavy gales with rain, from the 9th December, in latitude 48° North, to the 12th January, in 30° North. Afterwards moderate, till towards the end of March, in latitude 38° South, when it was squally for a week; afterwards moderate all the way.

THE diet of the crew consisted of rice, dâl, ghee, potatoes as long as they kept good (which was four months), salted herrings, turmeric, tamarinds. They had no fresh meat either homeward or outward bound. The lascars were provided in *England* with jackets, trowsers, Guernsey frocks, shoes and stockings. Touched no where, and arrived in *Bengal* on the 21st of May.

THERE were hardly ever three people unfit for duty, at one time, all the way out. The only complaints that occurred were slight bilious fevers, easily removed by a gentle emetic or cathartic; and scurvy. This last Captain BOWEN ascribed to the length of time the people had been at sea, and the want of vegetables. No symptom of it appeared while the potatoes lasted. The man, alluded to before, who suffered the most, shewed the first symptoms

symptoms of illness off *St. Paul's*, on the 9th of April. At that time there was much fleet and drizzling rain. His complaint began with swelling of the feet, and of the gums, as above described. No spots were observed. The swelling extended up to the middle of the thigh. He had raw potatoes with vinegar and lime-juice. His mouth was washed with elixir of vitriol diluted with water. And he took a tea-spoonful of powdered bark twice a day. Under this treatment, he got better: particularly, the swellings of his face and legs diminished. One man lost his life by an accident, but none died of disease, nor was a man sick on the arrival of the ship in *Bengal*. Captain BOWEN has not any list of the medicines which he carried from *Bengal*, but the following were supplied in *England* (1).

WE have much pleasure in calling the attention of the Board to this fact, that the *Shab Byramgore* has exhibited an instance, hitherto perhaps unprecedented, of a voyage to *England* and back to *Bengal*, without the loss of a man by disease. From a consideration of the facts contained in the foregoing narrative, we are inclined to ascribe this extraordinary degree of healthiness to the following causes.

1. THE small number of the crew, whereby they must have been more comfortably accommodated, and kept in a state of more constant activity. The encouraging of sports among the people must also have had a good effect in this respect.

2. THE free ventilation and cleanliness of the ship. On this head, however, it is necessary to remark, that in damp weather, the printed instructions contain directions for a more effectual method of preventing the evil effects of moisture than appears to have been used.

3. THE attention paid to keep the lascars clean in their persons, and to prevent them from remaining below in wet clothes. The oil used for rubbing their bodies seems also to have had a good effect. In severe weather, however, a change of warm clothing seems to be necessary.

4. THE improvements in their diet, by supplying them with capicum, onions, potatoes, turmeric, tamarinds, sugar, coriander and cummin seeds.

THE remark of Captain BOWEN, and Mr. NICHOLLS, that diminish-

(1) Here follows a list of medicines, which it is unnecessary to insert.

ing the proportion of animal food, and increasing that of vegetables, allowed to the native crew while in *England*, conduces to the preservation of their health, on the voyage out, is deserving of attention. It coincides with an opinion which we delivered on a former occasion, that the privation of such a stimulating diet is more severely felt, proportionally to the extent in which had been previously enjoyed.

THE crew had drams, not constantly, but only after being wet or fatigued. This plan appears to us better suited to the preservation of health, than the habitual use of spirits, which is known to predispose to scurvy. The same remark, however, does not apply to beer; which we think should be allowed, especially as the people have been accustomed, in *England*, to its use.

WE think that if the ghee and the articles of condiment were served weekly, or oftener, rather than monthly, they would be less liable to be lost, wasted, or destroyed, and consequently would be more effectually applied to the purposes intended.

THE success which has attended the preventative plan gave little scope for the exhibition of medicine. But we find it necessary to remark, that a fact, now as well established as any in the science of medicine, appears not to be yet universally known or attended to, among seafaring people, and cannot be too strenuously inculcated; we mean, that recent limes, lemons or oranges, when procurable, and in their absence, their juice preserved, is the only remedy which can be safely depended on for the cure of scurvy. Consequently no ship should go to sea without a proportion of that article.

ON the whole, the attention of Captain BOWEN and his officers to the health of the people committed to their care, we conceive to be deserving of high commendation; and their success encourages us to hope, that sickness and consequent mortality will be found by no means inseparably attendant on the voyages of lascars to *Europe*.

SINCE drawing up the instructions which have been delivered to the commanders of ships proceeding to *England* with lascars, farther inquiry and reflection have suggested to us several improvements, of which those instructions are susceptible. We have the honour to enclose, for the inspection of the Board, a copy containing those improvements, and beg

leave

leave to recommend that it be printed and given in future to the commanders, instead of the former one.

We have the honor to be,

S I R,

Your most obedient Servants,

CUDBERT THORNHILL, *Master Attendant.*

WILLIAM HUNTER, *Marine Surgeon.*

FORT WILLIAM, JUNE 26, 1804.

APPENDIX No. XXIII.

HAVING submitted the foregoing pages to the inspection of a medical friend, I received from him the following observations. As the writer has bestowed much consideration on the subject, particularly of the disease which I have called anasarca cacotrophica, and the result of his investigation is an opinion different from that above delivered, I think it necessary to lay his remarks before the reader, who being thus in possession of the arguments on both sides, will be the better enabled to form a correct judgment of his own.

“ I CANNOT return your essay on the diseases, incident to lascars on long voyages, without offering some observations of my own on the subject, generally; and some opinions, which I have formed, on the particular disease, to which so many of the crews of the ships *Mornington*, *Arran*, and *Exeter* fell victims on their return to *Bengal* in the year 1801.

“ THE first circumstance which arrests the attention, is the freedom from disease on the passage from *Bengal*, to *England*. The *Mornington* lost three only, in a voyage of six months and a half; she had indeed been five months at sea, before a single casualty occurred. The *Arran*, during a passage of five months and a half, lost but three of her crew; one of fever, the other two of complaints, with which they were afflicted, before the ship left *Bengal*; and the *Exeter*, during a voyage of five months and twenty-three days, buried but eight. The particulars of these homeward voyages we have not; but we observe the *Mornington* beginning to be sickly, when near the channel, and that on her arrival in port, her sick speedily recovered. The *Aurora*, “ notwithstanding a
“ tedious passage of nearly eight months, during which they encountered
“ extreme bad weather, and excessive fatigue, arrived in *England* with
“ the loss of one man only, who died of flux.” We learn elsewhere indeed (*Asiatic Annual Register* for 1802, page 82), that the *Sarat* *Castle* lost thirty-six of her native crew, and had forty-five sick on her arrival in *England*; and that the *Lucy Maria* buried twenty-two, and on her arrival in *England* had twenty in the sick list.

“ ALTHOUGH

“ Although, during the stay of those ships in *England*, we find their crews occasionally affected with fevers and inflammatory complaints; few fatal cases occurred; and on quitting *England* they seemed benefited by the sea air. But after having been about a month or five weeks at sea, a fatal disease, with a new train of symptoms arose, and increased until the end of the voyage: when all the sick were quickly restored to health, whether they remained on board, or were sent on shore.

“ The *Mornington* had been at sea two months and a half, when the fatal sickness began. The *Arran* lost one man soon after leaving *England*, and a second, who died of consumption, off *Madeira*; but the mortality on board her began, about six weeks from the date of her departure from *England*. The *Exeter* took on board in *England* a sickly crew, some of whom she lost, soon after sailing, of a disease, which the surgeon of His Majesty's ship *Argo*, by his ordering bark and wine for the sick, and saying he could not lay down an effectual plan of cure, without seeing them frequently; did not, it is presumed, consider scurvy. However, after having been at sea, two months and twenty-five days, a disease appeared, with similar symptoms to that which afflicted the crews of the *Mornington* and *Arran*; as rapid in its progress, and as fatal in its termination; but on the ship's arrival at *Madras*, the survivors speedily recovered.

“ On the return of the *Aurora* to *Bengal*, her crew seem to have suffered from two distinct diseases: fever carried off eight of them in May, and six in June; but in the middle of July, scurvy began to be prevalent, of which she buried two, between the 15th and 18th, when she arrived at *Madras*. Two more of her crew, however, died on shore, the following day, of scurvy; we may thence justly infer, that had her voyage been protracted but a very little, she would have been as fatal a ship, as any noticed in this report. Of the *Lucy Maria*, from an omission of dates, little more can be said, than that she seems to have suffered from fever, and that too at an early period of the voyage. The report of the *Marian* is also deficient with respect to dates; it appears however, that in the early part of the voyage she lost several of her crew of fever.

“ The *Countess of Sutherland* lost none homeward bound, although she had a long and disastrous voyage; but she touched at the *Cape*, where,
from

from the repairs she underwent, she must have remained some time. Of this very important circumstance, no notice is taken in the report. During the first two months and a half, after leaving *England*, she continued tolerably healthy, a few slight cases of fever only having occurred. The scurvy at length appeared, of which forty-two perished; notwithstanding the advantages of fine weather, and a large and airy ship.

THE *Porcher* was rather a sickly ship while in *England*, where she buried seven of her *Indian* crew, who died of fevers, and pulmonary complaints. After leaving *Madeira*, she became pretty healthy, and continued so until off the *Cape*, when the scurvy appeared, of which she lost five, before reaching the *Cape*; at that time ten were confined to their hammocks unable to move without assistance; and Mr. Ross observes “ had we not been fortunate in making the *Cape*, the majority of the ship’s company must inevitably have died.”

“ THE appearance of scurvy in this ship, is imputed to “ cold, off the “ *Cape*, against which the lascars, were not well provided with warm “ clothing; and want of cleanliness; with the decks having been allowed to remain wet.” However strongly these circumstances might have predisposed to the disease; their influence was not proof against the efficacy of a little fruit; for in three days after their arrival, the worst cases were able to sit up a short time in the day; in the space of six days, were so far recovered as to be able to walk the deck a little, and were quite well in a fortnight, although it does not appear that any change took place, either in the discipline of the ship, or clothing of the crew; but the sick were abundantly supplied with oranges.

“ It may be said, that the ship, on leaving the *Cape*, must have soon passed into a warmer climate; but her scorbutics were nearly well when she sailed; and on the other hand, an exemption from this cause availed the *Countess of Sutherland* nothing. She must have rounded the *Cape* in the most favorable season, as she arrived at *Saugor* the 29th January, and the report says “ had no bad weather, during the passage, and very “ little rain.”

“ THE *Scaleby Castle* left *England* with a numerous, and very debilitated crew; with typhus fever on board; but no casualty occurred until about

a month after sailing, when the scurvy made its appearance, of which she lost twenty-seven.

“ ON reviewing the foregoing leading facts, we observe a nearly uniform succession of circumstances in all the voyages; namely, very little sickness homeward bound; fevers and affections of the chest while in *England*, a return of health on quitting that country, occasionally bilious, and slight fevers, on passing into a warmer climate; and after having been at sea, from one to two months, disease again appearing, with a new train of symptoms; increasing rapidly; often fatal, but subsiding altogether on arrival in port.

“ FROM the similarity of the more obvious symptoms of the disease experienced on board the *Mornington*, *Arran*, and *Exeter*, to those detailed by Messrs. Ross and McWHIRTER; there is great reason to believe, that the disease has been, in its essence, the same in all the ships, and in my opinion, it has been scurvy; the symptoms of which have been modified, either by the diet used by the lascars, or some idiosyncrasy of constitution.

“ THE cause of this great mortality, has been looked for, at one time in the ships themselves; at another, in the discipline; some have washed too often; others not at all: some ships have had ports; others none. The weather has been accused; the dispositions of the lascars have not escaped; but it will be found very difficult to support either of these opinions; for we find that the largest and most airy ships, and that too, during the finest weather, as well as the small ships without ports, and under other unfavorable circumstances, have been alike unhealthy, and we find this fatal distemper uniformly breaking out, at a certain period of the voyage, although in other respects in no two ships under similar, on the contrary, often under the most dissimilar, circumstances.

“ WHATEVER mischief the breathing of foul air, (air deficient in oxygen or otherwise contaminated) may occasion, we must, for the above reason, exclude it, as a cause of the particular sickness here treated of. So much however, has been said of the necessity of cleanliness, and ventilation, that it may be proper to bestow some attention on the subject, lest its importance should be overrated.

“ FROM the circumstance of scurvy being observed to be more frequent

and fatal, in large, than in small ships, it would appear, that breathing an impure air slightly predisposes to the disease; but were its effects considerable, it would be difficult to cure the disease on ship board, whereas it is as readily, and as effectually cured, on ship board as on shore; and in cases where ships have been improperly crowded, fever (commonly if not always typhus) has been the consequence, and not scurvy.

“ THE history of the scurvy shews it breaking out, and committing the most cruel ravages, during the summer as well as during the winter months; in all climates, from the line to the poles; in well ventilated, and large ships; in ports, and at sea; notwithstanding windfalls, white-washing, dry-swabbing, and every exertion of the officers to keep their ships sweet; and indeed under circumstances, (in besieged places for instance), where no particular state of the atmosphere can have had the smallest effect, in producing the disease. There are however, evils to be apprehended, where personal cleanliness, ventilation, &c. are neglected; and evils of sufficient magnitude, to convince us, that no sacrifice, no exertion, the officers of a ship can make, can possibly be put in competition with them.

“ IT is impossible, says Dr. WRIGHT, “ to describe the horrors on board “ transports, when crowded with men, and neglected by officers. If the “ men be suffered to be dirty in their persons, in their bodies and bed “ clothes, if they be permitted to be much below, and come little upon “ deck, to breathe the open air: if they be not compelled to sweep, and “ scrape their berths, every day, if their bedding be not got up and aired “ every fair day, and above all, if the men are not put watch and “ watch upon deck: these, or any of these causes, will produce fever, “ and we have seen transports arrive here, who had lost eighty men on “ the passage, and the rest objects for the hospital. Such officers as were “ attentive to cleanliness &c. brought their men in high health, and “ spirits, and fit for immediate service.”

“ THE unfortunate *Hankey* is further evidence of fever, and not scurvy, being the consequence of breathing impure air. And we are told that of two hundred *Palatines* transported to *Nova Scotia* in 1750, one half perished by fever, on the voyage, although not one was affected with scurvy, nor was the distemper in the ship. Dr. LIND indeed observes,
that

that whatever inconveniences neglect of cleanliness may occasion, “ where
 “ the perspiration of a multitude of people is pent up and confined, they
 “ are not peculiar to ships, but common to all crowded jails, hospitals
 “ &c. and whatever bad effect such a vitiated air may have on this
 “ disease, yet it is certain that the scurvy is not the usual and natural
 “ consequence of it.”

“ In some of the transports that carried convicts to *New South Wales* in 1783, although extremely unhealthy during the voyage: the scurvy did not appear, until a short time after the convicts were landed; when it broke out, and increased to such a degree, notwithstanding every assistance from medicine; that a vessel was dispatched to *Lord Howe's Island* for turtles and birds for the sick. And the ship *Nancy*, Captain HERRON, of 202 tons, sailed from *Sligo* on July the 12th 1801, having on board 417 passengers from *Ireland*, and nine seamen: and arrived at *New York* the 27th September, having been at sea, two months and a half (seventy-seven days). Typhus fever and dysentery cut off ninety during the passage, and 180 arrived sick, of whom twenty-six perished. It is not intended to enter into this melancholy picture of human wretchedness; but we hear not a syllable of scurvy. Vide *Monthly Magazine* for April 1802, p. 264. But this fact is too well established, and generally known, to require any thing more being said in support of it.

“ WHATEVER induces debility; be it cold, poor living, idleness, despondency, or fatigue, seems strongly to predispose to scurvy; and *e contra*, whatever strengthens the system, although it may not altogether prevent, seems to delay its approach, and retard its progress; and it is probable that many of the boasted antiscorbutics, are efficacious to such extent only. It has been asserted that “ what will cure, will prevent;” but it is a maxim which our knowledge of medicine, and of diseases in general does not warrant, and which is contrary to our experience, of the disease at present treated of. We have, it is true, accounts of the scurvy having been kept at bay during the longest voyages; however, the voyage of a circumnavigator, may be considered as a succession of short trips, rather than one long voyage: and we have proof of ships suffering from scurvy, when long at sea, notwithstanding every exertion of the officers and surgeons, with the assistance even of oranges, lemons, &c. and Dr.

TROTTER observes that "disease though much retarded, must be the consequence of a long cruise."

"THE circumstance of officers, (1) boys, and women, being observed to enjoy an exemption from the scurvy, while it excludes any particular state of the atmosphere, or condition of a ship, from among the very powerful causes of the disease, confirms the influence of others; such as exposure to cold, to wet and bad living.

"WE will now examine the symptoms, that attended the dropical swellings, the disease, so fatally experienced on board the *Mornington*, *Arran* and *Exeter*; premising one observation only: that although scurvy may be, in its essence, the same disease, in every age, and climate; the symptoms of it do not seem to observe the same order, in their appearance. From the account of Lord ANSON's voyage, given by Mr. WALTER, we learn, that "Its symptoms are unconstant and innumerable, and its progress and effects extremely irregular; for scarcely any two persons have the same complaints, and where there hath been found some conformity in the symptoms, the order of their appearance has been totally different."

"1. THE disease on board the ships *Mornington*, *Arran* and *Exeter*, is said to have commenced with, "*œdematous swellings of the feet, accompanied with stiffness, and numbness of the joints; it rapidly extended upwards, occupying the legs and thighs.*"

"Dr. LIND, describing the first appearances of scurvy says, many have a swelling of the legs, which is first observed on their ankles towards evening, and hardly to be perceived next morning; after a short time gradually advancing up the leg; and the whole member becomes "œdematous." We have however in the following extract of a letter, published by Dr. LIND, from the surgeon of the *America* ship of war, dated *Manilla*, November 11, 1762, so exact a picture of the malady that afflicted the abovementioned ships, that it may be proper to transcribe it at length.

"OUR long cruise in expectation of commodore KERRAL's arrival, in order to the attack of the *French* settlements, at *Bourbon* and *Mauritius*, proved very fatal to our *East India* Squadron: having lost on

"(1), To this our gallant Admiral BLAKE was an exception. He died at the age of fifty-eight of dropsy and scurvy, and possibly fell a victim to improper treatment."

our return to *Madras* eight or nine hundred brave fellows, by an extraordinary species of scurvy. And as the crew of the *America* was as much, if not more, afflicted with it than any other ship, so I am enabled to furnish you with a more minute detail of the fatal and diversified symptoms of this calamity.

THE disease most commonly began with a soft swelling of the legs, which ascended to the thighs, enlarging them to an enormous size. This swelling, afterwards extending itself to the belly and feretum, gradually mounted up to the breast, and sometimes reached even to the head; so that all the cavities of the body being filled and distended with water, as well as the skin, the patients laboured under an universal dropsy, accompanied with swelled and putrified gums, a stiffness at the joints of the knees, livid stains and scorbutic spots.

THE patients had seldom any fever in the first stage of the disease; but when the swelling had once reached to the belly, by its hindering the proper action of the organs of respiration, a difficulty of breathing and a smart fever came on, especially towards the evening. And when the breast became also affected, which happened soon after the swelling had reached the belly, the fever and difficulty of breathing were both greatly increased. At this time the patients could by no means lie on their backs: this posture of the body exposing them to the most imminent danger of being suffocated.

AN obstruction of the perspiration, and a difficulty of making urine, occurred almost always at the commencement of the disease, and were increased as it advanced to its height. The parts of generation were, in almost every patient, distended with water, to a vast and enormous size. I frequently, by tapping, emptied them of three pints, or two quarts of water: this operation gave immediate ease, though the relief was but of short duration; for the disease proceeding from causes (afterwards to be mentioned) which continued daily to increase, it could not be cured, and was with difficulty palliated.

SOME bore their affliction in the first stage with tolerable spirits, though their legs, thighs, and belly were of an unwieldy size, of a white shining colour, and when pressed with the finger, retained for a considerable time its impression, of an inch and a half in depth.

“ Their appetite was at length impaired, their thirst became violent,
 “ they complained of sharp pains in the bones of their legs, and in their
 “ joints, as in the common scurvy; as also of an utter inability to
 “ walk; an attempt to move four or five steps occasioning a want of
 “ breath, as they expressed it, and a faintness.

“ ALL medicines were here unavailing. In the first stage, gentle
 “ purges and diuretics somewhat relieved their distress, and as the belly
 “ filled, it became absolutely necessary to administer jalap, and such
 “ like violent purges, at least twice a week, to prevent the patient from
 “ being suffocated by the water; as also diuretics in various forms, and
 “ we imagined oxymel of squills and garlic to be of some benefit.
 “ When the water had got into the breast, a short cough was a com-
 “ mon symptom. Blisters were at this time of service, as likewise
 “ pretty deep scarifications of the legs, and thighs, together with se-
 “ tons put into the belly. A mortification seldom or never (which
 “ was pretty remarkable) was the consequence of any of those operations.

“ BUT notwithstanding our utmost efforts, the disease always gained
 “ ground. The patient, after its first attack, seldom survived seven weeks;
 “ few lived longer, many expired in a shorter time. They all died of
 “ a suffocation from water, except those from whom the water was con-
 “ stantly drained off, by the means before mentioned; and they, after
 “ languishing for some time, expired at length, when reduced almost
 “ to perfect skeletons, all the fluids of their body having been quite
 “ exhausted.

“ BY this dreadful calamity, one third nearly of our number was cut
 “ off, in the space of nine months; for out of four hundred and twenty
 “ men in our ship, we buried one hundred and thirty before we arrived
 “ at *Malabar*, besides several others, who being in the last stage of their
 “ affliction, expired in the boats, from the fatigue of endeavouring to
 “ get on shore at *Malabar*, when the sea ran very high. However, upon
 “ landing our sick, most of them were soon re-established in health, by
 “ the use of vegetables, lime-juice, and syrup of garlic.

“ IT was an unfortunate circumstance for us; that there was little
 “ lime-juice in any of the ships of the Squadron. The Island of *Diego*
 “ *Reys*, from whence we had sailed, afforded no limes, nor any vegeta-
 “ tables,

bles, but a species of wild purslain, which grew in a salt marsh.
 “ Every Captain and Surgeon who had any lime-juice, experienced great
 “ benefit from it in this disease. One of the Captains who had a quan-
 “ tity of four beer, distributed it among the sick, which was of infinite
 “ service to them.

“ The causes of this fatal calamity, were principally the sultry heat
 “ of the climate and bad provisions, viz. bread, full of maggots, spoilt
 “ beef and pork, water full of vermin, and a very scanty allowance of
 “ that, and spoilt rice, which last, even in its best state, affords only a
 “ very poor and watery nourishment.”

“ In the foregoing report, we find almost all the symptoms of the disease
 that prevailed on board the *Mornington*, *Arran*, and *Exeter*; in addition
 to which however the patients had, putrid gums, livid stains, and
 scorbutic spots; clearly establishing the nature of the disease; but in
 which, the dropical swellings were the leading symptoms. We are
 informed that all medicines were unavailing, and from the very great loss
 the *Arran* sustained, it is perhaps doubtful, whether or not the sick were
 benefited by the treatment pursued: great benefit was however experi-
 enced, by the use of the little lime-juice they possessed: and on landing
 the sick, most of them were soon re-established in health, by the use of
 vegetables, lime-juice, and syrup of garlic.

“ EUGALLIUS, speaking of dropsy, as a symptom of scurvy, says, it re-
 quires quite a different method of cure, from that described by the an-
 tients: and is easily distinguished from it, by the difficulty of breathing
 becoming much worse after purgatives; and HORFMAN, speaking of hy-
 dropic swellings, in scorbutic persons, says, that they are to be treated
 by the antiscorbutic plants, and that by these simple remedies, he has
 frequently seen common people cured of hydropic humours. His de-
 scription of the last stage of scurvy, and towards the close of the malady,
 strikingly resembles the fatal termination of the disease experienced on
 board the *Mornington*, *Arran*, and *Exeter*: the breast affected with vio-
 lent straitness and oppression, and an extreme dyspnœa; some have a
 sharp pain, under the sternum, or in either side; in others, without any
 complaint of pain, the respiration becomes quickly contracted, and la-
 borious; ending in sudden, and often unexpected death.

2dly. “ *In one instance the fatal dyspnoea was not attended with any perceptible swelling.*”

“ WE have seen (says Mr. POUPART,) some whose breast was so oppressed, that they died all of a sudden. In the mean time we found on dissection, no water, neither in their breast, nor in their lungs.” Indeed the dissection of those, who have perished of the scurvy, with symptoms of oppression of the breast; fully proves that such oppression is often entirely independent of any fluid in the chest, mechanically obstructing the action of the heart or lungs.

3dly. “ *Death was preceded by pain at the scrobiculus cordis, increased by pressure.*”

“ DOCTOR LIND observes, that the acute pain in the breast, so frequent in this disease, is most commonly felt, on the left side, about a hand breadth above the pit of the stomach, at the articulation of the ribs with the breast bone.

4thly. “ *About this time, many had bilious vomitings.*”

“ A VOMITING is said to be known to be scorbutic, by not yielding to common remedies; on the contrary by being increased by their use; its sudden and unaccountable remission, and equally sudden return; and the retchings being violent, without bringing up much from the stomach.

5thly. “ *Face swelled and bloated.*”

“ DOCTOR TROTTER says, that in the scurvy, the colour of the face is changed, and the whole countenance as it were bloated; but this symptom is noticed by every author who has written on the disease.

“ GREAT thirst, urine scanty and high coloured, and belly costive, are all common attendants on scurvy: however, with all the foregoing symptoms of this disease, the affection of the mouth, and blotches on the skin, are positively denied; there is notwithstanding, some reason to believe, that these symptoms were present: but were overlooked.

“ WITH respect to the livid spots on the skin; they were probably overlooked; and it is not surprizing, that the officers and passengers of the *Mornington* and *Aurora*, (neither of these ships, it should be recollected,

carried a surgeon) should have overlooked this symptom; when we hear Doctor TROTTER saying, that in negroes, the colour of the skin, prevented the livid coloured spots, from being seen distinctly, as in white people. And Captain ROBERTS, although he had so often met with the disease, was not aware of the livid spots being symptoms of it, and accordingly in his narrative, page 191, says, " I never observed the skin " to be affected with red spots; but frequently scorbutic ulcers broke out " upon the shins and ankles."

" IF Captain ROBERTS, who has paid so much attention to the subject, could overlook the affection of the skin; it is little to be wondered at, that the officers and passengers of the *Mornington*, and *Exeter*, should not have noticed it. The *Arran*, it is true, had a surgeon on board, who denied the presence of this symptom of scurvy; and the weight of whose evidence the reader must appreciate. Whether petechiæ were present or not, in the disease experienced on board those ships, there is reason to believe that lascars labouring under scurvy are sometimes so affected; and we accordingly find Mr. Ross describing petechiæ, among the first symptoms of the disease, as it appeared in the lascars on the *Porcher*; but Mr. Ross had been at sea before, and had some experience in the scurvy, and most likely on the first suspicion of the disease, examined the skin particularly, as he appears to have done the mouth, for he says; " the " gums looked livid and were *tender to the touch* at first."

" THE affection of the mouth, had it been present in any great degree, must, we should think have been noticed, even by the most careless observer; but from Mr. Ross' observation, it must have been in his patients, at first very inconsiderable, and had not Mr. Ross' attention been particularly directed to the inquiry, by his knowledge of the disease, he would probably, in the first stage of the complaint, have overlooked it altogether; The symptom indeed does not seem to have been particularly distressing at any period of the disease; for towards the " latter end of the " disease, the gums are said only to have been spongy and foul."

" THE symptoms detailed by the surgeons of the ships *Scaleby Castle* and *Porcher*, are so like those taken notice of on board the *Mornington*, *Arran* and *Exeter*, that it may be proper to mention them here. *Porcher*: " Feet and legs became swelled, and pitted on pressure; with

“ petechiæ all over them; general lassitude, accompanied with great dis-
 “ inclination to motion; gums looked livid, and were tender to the
 “ touch at first: The progress of the disease being rapid; the abdomen
 “ was soon affected, with difficult respiration. The aversion to motion
 “ increased as the swelling of the body advanced; and towards the latter
 “ stage of the disease, the gums became spongy and foul, urine scanty
 “ and high coloured, face, arms and hands became considerably swelled;
 “ and gave a degree of resistance to the touch. Death shortly closed the
 “ scene.”

“ ON the *Scaleby Castle*. “ They were generally affected with the usual
 “ symptoms; in a few cases the lower extremities swelled to an enor-
 “ mous size, attended with considerable pain in the joints; but in all
 “ the gums were spongy, attended with affections of the chest, violent
 “ dyspnœa, and some with hæmorrhages &c.

“ THE nature of the disease appeared to me evidently to be scurvy,
 “ from its invariable mode of attack; with lethargy, despondency, spongy
 “ gums, &c. &c.

“ THE duration was by no means regular, some were carried off very
 “ suddenly, after a week or two's illness; and others survived for four,
 “ five, and nearly six weeks.”

“ MR. M'WHIRTER says, he had no opportunity of being generally in-
 formed whether the people who were sick, on their arrival in *India*, soon
 recovered after getting on shore, but that in a few instances, he met with
 the people, in seemingly tolerable health, who were scarcely able to go
 ashore, when they arrived; and his stay was only for ten days.

“ IN the accounts we have of scurvy, we occasionally hear of the
 gums growing over the teeth; the teeth falling from their sockets, with
 caries of the jaw-bone; at other times this distressing symptom seems to
 have been wanting altogether, or present in a very slight degree. Mr.
 MABANE, speaking of the scurvy at *Crownpoint* in *Canada*, says, the
 disease appeared “ with its usual symptoms, especially contracted joints;
 “ that on the return of warm weather, *those who had* putrid gums, and
 “ blotches on the skin recovered more slowly, and required the
 “ assistance of green vegetables:” we may justly infer, that there
 were *those who had not* these symptoms. In the scurvy which pre-
 vailed

prevailed in *Hampshire* in 1759 and 1760, it is said that “ the gums “ were not always affected ” and by the account of the scurvy in *Breda*, we learn, that “ in some the gums were rotten, in others spots only appeared on the body,” especially in such as had discharges of blood, which sometimes prevented, at other times diminished the swelling of the gums; the spots were chiefly upon the legs, they were also to be seen on the back, arms, breast, neck, as likewise upon the face, even when the gums continued sound; chiefly in such as took care to preserve their teeth, and were continually washing their mouth, with astringent compositions of salt, alum, and the like. And Mr. BISSSET, in his history of the scurvy in the *West Indies*, says, he “ never saw one case of “ luxuriant spongy flesh arising from the gums.”

HAVING fortunately heard, (May 4, 1804), that the *Britannia* (2). Captain DAWSON, had arrived off *Calcutta* the preceding evening from *St. Helena*, I went on board of her, accompanied by Captain ROBERTS, to inquire if any of the crew were sick of the scurvy. The chief officer informed us, that there was one bad case of scurvy in the ship, and that two or three of her native crew were slightly affected with the disease.

THE

(2) “ The ship *Britannia* Captain DAWSON, of 520 tons, having three ports in each side, a crew of sixty-one natives of *India* (fifty-three lascars and eight *Portuguese*) sailed from *Calcutta*, December 26, 1803, bound to *St. Helena*, with stores for that settlement.

“ At her departure, the crew were in good health, excepting two or three who had venereals. The weather was fine during the passage down the *Bay*, until in latitude 15 South, longitude 63 North, off the *Cape*, during which they had rainy, and blowing weather; this, together with a frequent use of the pumps, fatigued the crew greatly: rounding the *Cape* the weather was very fine indeed, and continued so until their arrival at *St. Helena*, on the 18th January 1804.

“ No casualty occurred during the passage to *St. Helena*; but on nearing the Island, two lascars fell sick: one an old venereal case, the symptoms of which had never entirely left him; the symptoms were pain in the joint, which were a little swelled; he obtained some relief in the hospital at *St. Helena*, but was not cured, and has still symptoms of the disease on him.

“ The other a case of scurvy; the disease commenced early in January, with swelled legs, and ulcers on the shins: the swelling of the leg did not extend higher than the knee, above which the whole body was terribly emaciated; its progress was inconsiderable when the ship arrived at *St. Helena*, where the patient was sent to the hospital; but returned to the ship, on the 15th February, having received but little benefit: from this time the malady increased, until his death, which was protracted to the 5th March. The gums were very foul. The teeth had all dropped out, before he left the hospital at *St. Helena*. The skin was not affected.

“ While the ship remained at *St. Helena*, the crew had plenty of fresh fish, were often on shore, particularly such as were sickly, who were generally sent on shore every day to gather water cresses.

“ February 17th, left *St. Helena*, and had pleasant weather until near the *Cape*, off which they experienced much cold, rain, and wind for five weeks.

THE man most afflicted (a lascar), we found under the long boat eating with seemingly good appetite, rice and water; his cheeks frightfully puffed, and the whole face rather bloated; the left leg and thigh a little swelled, the muscles on which were so hard, that passing the finger round the leg about four inches below the knee, it was difficult if possible, to determine by the touch, when it passed from over the *tibia* to the *tibialis anticus* muscle. The calf of the right leg was also very hard, and the hardness extended to a little above the knee; but without any swelling. The ham of the left leg was rigidly contracted, and on being desired to raise himself up, which he did with difficulty, and not without assistance, he shewed us that he was unable to straighten the limb. He complained of shortness of breath, on making the least exertion, and of pain in the left side, near the *scrobiculus cordis*, on which he said he was unable to sleep, observing at the same time, that the whole of the left side, was more affected than the right. The mouth was most shockingly affected. On the palate, between the uvula and upper jaw teeth on the right side, was a large scorbutic ulcer, rising considerably above the surrounding parts, and covered with a clot of dark coloured blood: Captain ROBERTS observed, that in the worst cases of scurvy he had ever met with, he had never seen so severe an affection of the mouth.

" April 3d, a man died, after two or three week's illness; the first symptoms, contraction of the joints of the knees, prostration of strength, hardness of the calves of the legs; the disease seemed stationary for some time, excepting that the debility was observed to increase. In the night of the 3d of April, the weather being bad, he was directed to go below out of the way; in the morning however, he was found dead upon deck. The face and body were free from swelling, on the contrary, the patient was greatly emaciated; the mouth was much affected; but there were no blotches on the skin, nor ulcers on the body.

" A man died on the 9th April, with similar symptoms to those described above, in addition to which, extreme dyspnoea took place about a fortnight before death, with occasional vomiting of blood, and severe pain at the *scrobiculus cordis*, the mouth much affected, but without petechiae or ulcers.

" The last casualty occurred on the 20th April, the disease commenced with edematous swellings of the feet, which were however, confined to the feet, and about the ankles: the right foot gangrened, and the day before his death, the foot dropped off at the ankle joint; he had formerly lost his toes, by the frost on the coast of *New Holland*. The factor about this man, prevented much inquiry into the symptoms.

" From the 3d April, to the 30th, when the ship arrived at *Diamond Harbour*, the weather was tolerably good, and the people in general, healthy.

" Diet on the voyage to *St. Helena* from the ship; rice, dal, and ghee. The lascars had fish of their own. Some onions, turmeric, and dried chillies: drams were served in bad weather. The serang supplied them with warm clothing of blanketing in cold weather. No fresh provisions were served at *St. Helena*; but fresh vegetables were obtained almost every day, with plenty of fresh fish; on the voyage back, the crew had fish and potatoes, which were procured at the island. The scorbutic patients had raw potatoes to eat; the limbs were bathed with vinegar, and the ulcers dressed with basilicon. No limes were on board."

This

This man had no scorbutic ulcers on the body, excepting that already mentioned; nor a single spot on the skin; this we most satisfactorily ascertained, stripping off all his clothes, and examining the body most particularly; his skin was fortunately clear of the scurf and eruptions to which the natives are so subject.

“ WHILE we were employed in examining the legs and skin of this patient, the chief and second officer remained with us, but returned to some duty then carrying on, before we had inquired into the state of the mouth; as however they seemed acquainted with the case, we determined to ascertain, whether or not they had noticed this symptom; we accordingly asked the second officer whether the man's mouth was sore, or the gums spongy or foul. He replied that he believed not; at the same time observing that the face was terribly swelled, but that he had never heard him complain of his mouth being sore; we then desired to see the chief officer, to whom the same questions were put, and who gave us, in substance, similar answers; when their attention was directed to the circumstance, they were astonished that they should never have noticed it. So much for the evidence of those, who possess no professional knowledge, respecting medical facts. It must however be acknowledged, we afterwards learnt that Captain DAWSON had observed the affection of this man's mouth.

“ THIS man, we were informed, left *St. Helena* in good health; but fell sick after having been about a month at sea; the first symptom a watery swelling of the feet, which however went off as the muscles acquired the diseased hardness: he had been ill about six weeks.

“ ON another man we found two large scorbutic ulcers on the leg, one near the ankle, the other on the shin, about a hand's breadth below the knee, with hardness of the muscles of the calves of the legs. The affection of the mouth had in this case also, made some progress, but the skin was wholly free from blemish. No antiscorbutics were on board.

“ IN whatever light the affection of the mouth may be considered, there can be no doubt that the scurvy may prevail in a very high degree without the skin becoming affected in the least, and that consequently such appearance cannot be considered as a pathognomonic symptom of the disease. Doctor TROTTER says, he would define scurvy. “ *Asibentia,*

“ stomacace, in cute maculae diversicolores, plerumque livescunt.” Whether the *stomacace* remain or not, the *maculae diversicolores* must be excluded; and from several quotations in this paper, it is even probable, that the former may not long preserve its ground, as a pathognomonic symptom of the disease.

“ THE following observations of Doctor G. FORDYCE, on fever, may probably be equally applicable to the disease at present under consideration. He says “ it is an idea that many practitioners in the line “ of healing have cherished; that in every disease there is some appearance which being present the disease is present, being absent the “ disease is absent. It is indeed so flattering a prospect, and would render a knowledge of the disease so perfectly easy, that men who have “ considered themselves in the line of medicine have constantly been extremely apt to give way to the delusion. If we examine * * * &c. &c. “ or any other of the symptoms which often take place in fever, we shall “ find that they may be present when there is no fever, and absent in a “ patient afflicted with this disease, and therefore we cannot allow that “ there is any pathognomonic symptom of fever.”

“ IN doubtful cases, it may be proper to rest our decision on the nature of a disease, rather on the appearances generally, than on the presence, or absence, of any one particular symptom; to consider the disease to be that, which the symptoms generally would make it, until want of success, or some other circumstance, induced us to alter our opinion of its nature; but much must here depend on the sagacity of the practitioner.

“ DR. LIND observes, that a mistake in the nature of scurvy “ has “ a most fatal influence on the practice; thus the original and real disease has been lost and confounded amidst such indefinite distinctions “ and divisions of it, that it is sometimes not known by the best practitioners when it really occurs: to this was owing the loss of many thousand *Germans* in *Hungary*, not many years ago, when the physicians “ to that army, together with the whole learned college of physicians at “ *Vienna*, assisted by all the books extant on the subject, were at a loss “ how to remedy this dreadful calamity.”

“ ALTHOUGH, in the *Scaleby Castle*, a few of the patients had the lower extremities swelled to an enormous size, the surgeon Mr. M'WHIRTER, makes

makes no mention of evacuations; he trusted on the contrary to nitre, vinegar, mineral acids, &c. having no better antiscorbutics on board; and although he says he had the mortification to find no visible good effects from his remedies; a comparison of the mortality on board that ship, with that experienced on board the *Mornington*, *Arran*, and *Exeter*, would seem to be much in favor of his treatment. During a voyage of four months, he lost twenty-seven, of a crew of one hundred and twenty, or one hundred and thirty; but it is to be recollected that the lascars came on board in a very debilitated state, from the intense cold, in consequence of which, several lost their toes; and when she sailed “a fever “ of the typhus kind” raged a short time: while the *Mornington*, Captain KELSO, during a voyage of four months, lost above half her native crew, (fifty-five, of one hundred and five) notwithstanding Captain KELSO’s “pretty free bleedings,” purges, mercurial frictions, peruvian bark, &c. The *Arran*, during a short voyage, of two months and twenty-five days, buried nearly half her crew, (forty-one of eighty-six), and had she not stopped, at the end of that time, at the *Cape*, the report says, “She would scarcely have brought one of her native crew alive to *Bengal*,” indeed as on the ship’s arrival at the *Cape*, three or four were dying daily, it is hardly probable that she would, notwithstanding the considerable relief said to have been afforded by the emetics, purges of calomel and jalap, scarifications and blisters. The *Exeter*, during a voyage of five months, lost more than half her crew (twenty-four of forty-five): of the medical treatment in this ship we are not informed.

“WE now come to the last, and considered in addition to the foregoing circumstances, certainly very strong, if not conclusive, evidence of the disease which committed such devastation on board the ships *Mornington*, *Arran*, and *Exeter*, having been scurvy; namely, the circumstance of its having vanished immediately on the arrival of these ships in port. When the *Mornington* came into the *Bengal* river “all “ the survivors soon recovered.” The *Arran* remained at the *Cape* sixteen days only; and in that short time the crew regained sufficient strength, to enable them to bear a voyage to *Bengal*, of two months and ten days, without the loss of a man. The *Exeter*, left *Portsmouth* on the 16th December, proved sickly the first part of the voyage; she however lost

none between the 18th of January and 18th March. On the 15th May, she arrived at *Madras*, having lost twenty-four of her crew outward bound; but the survivors speedily recovered at *Madras*. And the *Porcher*, having provided herself at the *Cape*, with a supply of fresh oranges, prosecuted her voyage, recovering the sick on board, and lost not another man of the scurvy during the remainder of it.

“ It is by no means pretended, that the foregoing arguments actually prove the disease to have been scurvy; and it is perhaps a question, which experience alone can determine: It may however, in the mean time, be worth while to give the antiscorbutics a fair trial; which, if they should fail to afford relief, may be followed by the alternate use of hydragogue and tonic medicines.”

C. C.

THUS far my correspondent, whose ingenuity and careful consideration of the subject, entitle his remarks to much attention. Still however, I cannot entirely coincide with him in opinion on two points:—one of these is the exclusion of foul air, and particular states of the atmosphere, from the list of powerful causes, in the production of scurvy. The occurrence of this disease, in well aired, no less than in crowded ships, in warm and dry weather, as well as in that which was cold and moist, is insufficient to establish such a doctrine, and only proves that another cause may exist, powerful enough to produce the distemper without their co-operation. On board Lord Anson's ships, in the *Salisbury*, and among the fishermen on the coast of *Fife*, the principal causes of scurvy, according to Dr. LIND (p. 49, 67, 445, 52, 63, 124) was cold and dampness. In the instance of the slaves on board of a *Guinea* ship, related by Doctor TROTTER, it was inactivity and crowding, without sufficient air: while their diet was nearly the same that they were accustomed to on shore.

THE second question regards the identity of the disease which prevailed on board the *Mornington*, the *Arran*, and the *Exeter*, with the ordinary sea scurvy. Several important symptoms, no doubt, are common to both, and both appear indebted to nearly the same causes for their existence. But yet I conceive the following circumstances sufficient to mark two distinct diseases.

1. The œdematous swellings, which in scurvy constitute only a secondary symptom, were the principal one on board of the *Mornington*, *Arran*, and *Exeter*.

2. On the other hand, the affection of the gums was entirely wanting.

3. The dyspnoea in anasarca, is most severe in a horizontal posture, and is relieved by sitting upright; whereas those in the advanced stage of scurvy cannot sit upright without fainting.

4. The progress to a fatal termination is rapid in anasarca cacotrophica, often completed in two days; whereas it appears, from Captain RATTR's narrative, that a whole ship's company may be laid up for months in scurvy, without losing a man.

5. We find, endemic on *Ceylon*, a disease exactly resembling that which prevailed on board the forementioned ships. Indeed, the only distinction that can be marked between them is the paralysis of the limbs in *Beriberi*; and the numbness remarked on board of those ships very nearly approaches to this. Now, that the *Ceylon Beriberi* is not scurvy, we may infer from the separate prevalence of the two diseases in two different corps at the same place; from *Beriberi* having resisted the use of citric acid and acid fruits; and from its cure by mercurial purges, which could not be expected to succeed in scurvy.

BESIDES the points of similitude before noticed, we have seen, in several of the foregoing narratives, that the leading symptoms of both diseases were sometimes united in the same subject. To these my correspondent has added a remarkable instance, which occurred on board His Majesty's ship *America*. On these it is necessary to offer a few remarks.

In the *America*, the anasarca cacotrophica was, as in the *Porcher*, complicated with symptoms of scurvy. But the same disease, on its first appearance in the *Exeter*, was joined with feverish symptoms. We are not then to infer the disease to be identified, in the first case with scurvy, and in the second with fever; but merely, that two diseases were, in both instances, present at the same time.

THE celebrated JOHN HUNTER, indeed maintained, that no two actions, and consequently no two diseases, can take place in the same constitution, at the same time. And in proof of this, he alleges a case wherein

measles suspended the progress of inoculated small-pox, which ran its course separately, after the measles had disappeared (3). Another similar case is related by VAN SWIETEN (4), who also quotes from the medical essays (5), an instance of the variolous action in the system having guarded the constitution against syphilitic contagion. The suspension or cure of gonorrhœa by fever, is another fact, adduced by Mr. HUNTER in support of his opinion. But although the presence of small-pox and measles, in the same person, at the same time, be a rare occurrence, we have the testimony of Doctor P. RUSSELL, and Mr. LEESE for its actually happening in three instances (6); consequently, it is not, as Mr. HUNTER says, impossible.

AND, although the greatest deference is due to the accuracy and experience of Mr. HUNTER, yet his facts appear insufficient to overthrow the united experience of physicians, which led them to conclude, that when a constitution has been exposed to the causes of two diseases, if both are not produced, the disease which follows partakes, at least, of the nature of both. Just as a body, acted on by two forces, in different directions, moves not in the direction of either, but describes the diagonal of a parallelogram, of which those forces are the sides. Thus SYDENHAM observed small-pox to be modified, by a dysentery prevailing epidemically (7); and HALL has remarked the same disease to receive occasionally the character of intermittent fever (8). HUXHAM observed a very fatal kind of small-pox come out with the symptoms of a malignant fever, which prevailed especially among sailors, soldiers and prisoners; whereas those who had not been near the patients labouring under that fever, had the disease of a mild kind (9). And the union of lues venerea with other diseases, particularly scrophula and scurvy, in the same constitution, and in the same parts, though denied by Mr. HUNTER, who says he never saw an instance of it, rests on the testimony of too many respectable practitioners to be easily rejected (10).

(3) On Venereal Disease, page 2, On Blood, page 3.

(4) Comment. § 1382, No. 12.

(5) Volume III, No. XXI, page 326.

(6) Medical and Physical Journal, volume IV, page 29, 69.

(7) Section IV, chapter 5.

(8) On small-pox and measles, chapter IV.

(9) Essay on fevers, page 131. Van Swiet. § 1387.

(10) Astruc, on Venereal Disease, Vol. II, page 65, 113, 114. Eell on Lues Venerea, Vol. II, page 99.

The evacuating plan is said to have proved unsuccessful on board the *America*. *Gentle purges* were used twice a week. To remove the bad effect of evacuants, administered in such a way, alternately with tonics, as to support the excitement, was not tried. Yet the temporary relief, obtained even by that palliative mode, gives some reason to believe, that a more active practice, like that of Mr. CHRISTIE in *Beriberi*, might have proved successful, in a greater degree; although, from the presence of putrid gums and other true scorbutic symptoms, it could not be completely so.

The disease in the *America*, was of longer duration, than on board of those ships, where anasarca cæcetrophica prevailed, unmixed with scurvy. Hence, the bodies of the sick were much emaciated; whereas in those who died of anasarca cæcetrophica, or *Beriberi*, the cellular substance often contained a considerable quantity of fat.

THE sick soon recovered after landing at *Madras*. So did those ill of anasarca cæcetrophica, on their arrival in port. But this does not prove the disease to be scurvy; for the same thing, according to Mr. COLLEMAN, happened from a similar change of situation, to those ill of *Beriberi*, which we have shewn not to be scurvy.

LIME-JUICE could not be had on board the *America*, but it was beneficial on board the other ships which had also the disease. It has failed in *Beriberi*. This difference might proceed, from the true scorbutic symptoms, joined with anasarca, on board the *America*.

THERE does not appear sufficient reason for supposing, that spots on the skin existed, but were overlooked, on board the *Mornington* and other ships. Nor is it of much consequence; as it appears from some of the other narratives, and particularly in the man on board the *Britannia*, who was carefully examined with this express view, that scurvy, distinctly marked by affection of the gums, to a high degree, may exist without that symptom.

On the whole, therefore, I am still of opinion, that the disease which on board the *Mornington*, the *Arran*, and the *Exeter*, proved so fatal to the native crews, was the same that is known on *Ceylon* by the name of *Beriberi*; that this disease is not scurvy, but a species of anasarca, resisting the citric acid and acid fruits, and curable by evacuant medicines, combined

combined with stimulants, tonics, nourishing diet, exercise and frictions.

It must however be owned, that our experience of this disease, as occurring on board of ships, is yet too limited, to pronounce on this question with certainty. And, as it would be less dangerous, to treat a dropsy with the remedies proper for scurvy, than to reverse this practice, I have recommended, in the first instance, a trial of antiscorbutics, together with nourishing diet, and the auxiliary means abovementioned. To this alteration in the original plan, exhibited in Appendix No. 1. I was led, partly by my correspondent's reasoning, but chiefly by the experience of Mr. COLHOUN, who found a stimulating diet, with exercise and frictions, successful in the cure of *Beriberi*. Should this method fail, the cure by evacnants, stimulants, and tonics must be vigorously pursued.

I CANNOT conclude, without expressing the obligations, which not only myself individually, but also, as I conceive, the cause of science and humanity owe, to those Gentlemen, both in and out of the medical profession, whose zeal and liberality, in contributing the fruit of their respective observations, has enabled me to present the reader with many curious and useful facts, respecting a disease hitherto but little known. My own share in this useful task has been merely to call forth, and convey to the public eye, the knowledge of others.

Fungor vice cotis, acutum
Reddere quæ ferrum valet, exors ipsa secandi.



E R R A T A

Page.	30	Line.	15	<i>for</i> through,	<i>read</i> through.
—	37	—	28	— nutritious,	— nutritious.
—	40	—	7	— will,	— with.
—	50	—	11	— prodnce,	— produce.
—	51	—	2	— effuvia,	— effluvia.
—	68	—	8	— brought,	— bought.
—	69	—	13	— chourah,	— choora.
—	71	—	8	— hamane,	— humane.
—	81	—	22	— vomitting,	— vomiting.
—	88	—	28	— appearnce,	— appearance.
—	97	—	12	— supportinng,	— supporting.
—	99	—	5	<i>dele</i> leave to.	
—	108	—	15	— zviij,	— xvij.
—	147	—	32	— ἰλος,	— ἰλος.
—	151	—	24	— fylphur,	— sulphur.
—	159	—	26	— ασαυλος,	— ασαυλος.
—	160	—	25	— ἡ,	— η.
—	161	—	38	— vetustima,	— vetustissima.
—	167	—	4	— Burhumuns,	— Brabmuns.
—	171	—	21	<i>after</i> from,	<i>dele</i> , a.
—	172	—	35	<i>for</i> diversifque,	<i>read</i> diversifque.
—	174	—	3	<i>after</i> idea of,	<i>insert</i> the.
—	226	—	26	<i>for</i> occasionally,	<i>read</i> occasionally.
—	232	—	25	— was,	— were.
—	232	—	26	— it was,	— they were.
—	232	—	27	— their diet,	— the diet of those people.





